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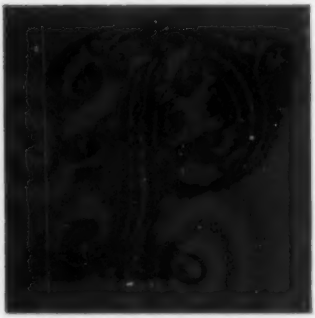

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*The American Foundation: Medical Research: A Midcentury Survey, Boston, Little, Brown and Company, 1955, vol. 1, p. XXXI.

**Ibid., p. 600.

Three Years' Experience in the Coordinated Outpatient Program at Washington University*

ROBERT E. SHANK

A NEW teaching endeavor was introduced into the curriculum of the fourth year at the Washington University School of Medicine in June 1952. This program, affording experience in the office practice of medicine and in the care of ambulatory patients, is centered in the outpatient department where it engages the efforts of nine different clinics and seven departments of the medical school with primary responsibility for planning and direction residing with the department of preventive medicine. The teaching program has added a new dimension to the experience of medical students in this school and has permitted the development of a coordinated program of medical care for the patients served. The purpose of this communication is to afford a description of the program and evaluation of the contributions it has made and the problems it has presented.

Background of experience and planning

Prior to introduction of the Coordinated Outpatient Teaching Program, medical students were assigned for relatively short intervals during their third or fourth years to clinics representing the various specialties. The length of these periods varied from as long as six weeks in medicine clinics to as brief a period as two weeks in otolaryngology and ophthalmology. The student seldom saw the same patient on more than two clinic visits and if the patient was referred to another clinic for consultation or treatment, the student could learn of the progress of care only if he took initiative to secure and review the medical record. Moreover, the student was, in the true sense of the term, a clerk, no effort being made to present him to the patient as physician. Therefore, conditions and time allowances obviated the development of satisfactory rapport and mutual understanding between the student physician and patient. The emphasis was, of necessity, on diagnosis with little or no opportunity for establishment and evaluation of procedures of therapy.

The Washington University Clinics have for many years afforded medical care to the medically indigent not only from metropolitan St. Louis but from wide areas in surrounding states as well. Within the institution the clinics have existed to provide a

Dr. Shank is Danforth professor of preventive medicine and chairman of the committee for reorganization of professional services in the outpatient department at Washington University School of Medicine in St. Louis. This article is a report of the committee, other members of which are Dr. Arthur C. Brooks, Dr. Robert Elman, Harry Panhorst, Dr. George Saslow and Dr. Ralph B. Woolf.

*Supported in part by a Teaching Grant from the Rockefeller Foundation.

selection of clinical material for ward services of the affiliated hospitals and learning experience for students and hospital house staffs. The various specialty and subspecialty clinics are staffed by the appropriate departments of the medical school. As new specialties and interests have evolved, new clinics have been added. Prior to 1952 there had been no attempt at coordination and integration of medical care for the individual patient. On repeated visits of a patient to a clinic he might be seen and cared for by as many different doctors. It was possible for the patient to be currently under observation and care in several different clinics without efforts to integrate programs of therapy; it was also possible for a patient to follow treatment in one specialty clinic without attention being given to other problems of equal importance, which might lie in the area of responsibility of another specialty. In a real sense patients and important problems were being lost to observation and care. Such events are readily possible and difficult to avoid in a large clinic operation such as this one, with the total number of patient visits annually exceeding 170,000.

The stimulus to reorganization of professional services and development of more effective learning experience for medical students resided in the problems described above and was recognized by many of the clinical departments of the medical school. One department, however, contributed another consideration. This was the department of preventive medicine. Experience with a teaching endeavor of another type had established the desirability for relating considerations and techniques of prevention and of social and environmental factors in illness to other experiences of the medical student in the care of patients. These problems seemed to be well and perhaps best exemplified by the ambulatory patient cared for in the clinic and in his home. Important, also, was the consideration that the physician in practice spends most of his time in his office, where much of his concern in patient management must be for modifying living habits and environmental conditions.

Accordingly, a committee was appointed in 1950 with broad responsibilities to study the variety of problems presented and to make recommendations for change and institution of new procedures. In approaching its charges the committee undertook detailed study of patient load, physical facilities, administrative procedure, staffing of the various clinics and teaching programs. Early in its deliberations it accepted two functions of the outpatient department as central to evaluation of all problems. These were (1) utilization of patient material and facilities for most effective training of medical students and (2) provision of medical care as a community service. It was agreed that in an attempt to provide an improved use of ambulatory patients for teaching purposes all other problems of function would be more clearly defined and more adequately dealt with.

Description of the teaching program

In establishing a new approach to utilization of the clinics for teaching of medical students, four general objectives were proposed. These were:

1.) To demonstate effective office practice.

2.) To provide an experience in coordinated and comprehensive medical care of ambulatory patients.

3.) To plan for optimal utilization of the time spent by patients, phy-

sicians and medical students in the clinics.

4.) To afford medical care for patients in the clinics of a quality comparable to that available in the affiliated hospitals.

It was decided that the objectives could be best achieved if fourth year students were assigned to the program for as long a period as practicable. Accordingly, a 12-week clerkship was evolved and introduced into the curriculum in June 1952. Students are assigned to given clinics for half day periods. All new patients are first seen and studied in the medicine clinic, with exceptions being made only for pregnant women and for patients with acute ophthalmologic or traumatic surgical disorders. The student is given all responsibilities of the physician, with ready access to an assigned instructor who serves as consultant. Referrals to participating clinics are arranged so that the patient attends at a time when the student also is in that clinic. Spot or immediate consultations are available and are utilized when a problem requiring emergency care is involved, or if the patient comes from such a distance that to remain in St. Louis while awaiting later appointment would impose undue financial or physical hardship.

In his relationship with patients the student is encouraged to include consideration of social and emotional factors in illness and of practical modification of environment and living habits for purposes of treatment or health. Accordingly, he is expected to retain contact with his patients during periods of hospitalization and to visit certain of them in the home. In all activities outside the clinic the student has guidance from an assigned instructor and a social worker

TABLE I

STUDENT SCHEDULE FOR THE COORDINATED OUT-PATIENT CLERKSHIP

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8:30 AM–12 Noon	Medicine	Obstetrics and Gynecology	Medicine	Surgery	Medicine (Neurology Clinic on alternate Fridays)	Psychiatry
12–1 PM	Ambulatory Care Clinic					
2–5 PM	Surgery / Psychiatry	Opthalmology / Otolaryngology		2–3:30 PM Preventive Medicine Seminars 3:30–5 PM Interview Period	Obs.–Gyn. / Dermatology	

from the department of preventive medicine with whom he meets at scheduled weekly meetings and on frequent other occasions by appointment.

From 28 to 30 students are assigned to the Coordinated Clinic Clerkship for each 12-week period. Smaller groups of seven or eight follow a weekly schedule like that indicated in Table I. In afternoons students attend one of the clinics listed for the first six weeks and the other for the second six weeks. One afternoon each week is allotted to seminars and interviews with members of the staff of the department of preventive medicine and another is free for reviewing case records or for visiting patients in the home or hospital. In addition, the entire group of students meets on Monday at noon for a clinic on ambulatory care, which is devoted to office and home management of common and representative disease problems.

The student has responsibility for complete recording of all observations in the medical record and in addition maintains a summary sheet of information on each new patient under his care (Figure I). This includes pertinent clinical data as well as related social and environmental considerations. One copy is kept by the student in a notebook, while another is left with his assigned instructor in the department of preventive medicine. From this source selection of case material is made for seminars and interviews. In addition, these records afford a means of analyzing the type and number of problems dealt with by the student.

Most of the teaching effort in the clerkship is concerned with individual student - instructor conferences. Exceptions are the weekly seminars conducted by the department of preventive medicine in which 15 students and two or three instructors participate. These are planned as informal discussions of representative problems. Ordinarily they begin with presentation of a case currently under the care of one of the students and then move into broader areas, such as the impact of illness on other members of the family, assistance afforded by agencies in the community, importance of the disease or problem as assessed by morbidity or mortality data, approaches to prevention and control and consideration of existing public health measures.

Description of patients served

The clinics participating in the teaching program are all long established and continue to function as previously. It was not considered necessary to develop new clinics to serve the purposes of the clerkship. Rather, it was thought that the program would be most effective if the student could participate in established methods of provision of medical care, but with concurrent efforts to increase the cooperation and collaboration between clinics of the various specialties.

Considered most important in appraising the type of case material is the group of new patients for which the student has had responsibility for initial evaluation and continued care. To afford a description of the patient material, analysis has been made of the characteristics and disposition of 329 new patients of 14 students in a recent clerkship (Table II). All were given a test of means before acceptance for care in the clinics and were demonstrated to be financially unable to meet the costs of medical care by private practitioners. It will be noted that during the period of the clerkship an average

FIGURE 1

CASE SUMMARY SHEET

Clinic _____ **Date** _____ **Student** _____

Name _____ **Age** _____ **M F W N M S W D Cl. No.** _____

Address and Tel. No. _____ **Cl. Rating 1 2 3 4** _____

Clinical Summary: _____

_____

_____

_____

_____

_____

_____

_____

Diagnostic Impression: _____

_____

Personal, Social and Environmental Factors relevant to:

a) Symptoms: _____

_____

b) Treatment: _____

_____

c) Rehabilitation and prevention: _____

_____

Diagnostic tests ordered: _____

Referrals: 1. Clinics _____

2. Social Service _____

3. Community Agencies _____

Treatment: _____

_____

_____

_____

_____

Final Disposition

Under Rx _____

Lapsed _____

Why _____

_____

Discharged _____

Transf'd for further care to

_____ **Clinic**

Refer'd back to L.M.D. _____

TABLE II
ANALYSIS OF NEW PATIENTS CARED FOR BY STUDENTS
(329 Cases of 14 Students)

AGE DISTRIBUTION (years)	NEW PATIENTS TOTAL NUMBER	PERCENT OF TOTAL	PER STUDENT
15-29	52	16.0	3.7
30-44	90	27.6	6.4
45-59	94	28.8	6.7
60+	90	27.6	6.4
SEX			
Male	122	37.1	8.7
Female	207	62.9	14.8
RACE			
White	186	56.5	13.3
Negro	143	43.5	10.2
TOTAL	329	100	23.5

of 23.5 new patients were seen by each student. All were adult patients with nearly twice as many women as men.

Table III records the disposition made of these patients. In about 29 per cent either no definitive diagnosis was achieved or complaints were considered to be of functional or psychosomatic origin. Another 15 per cent lapsed or failed to keep appointments so that diagnostic workups were incomplete or responses to therapy not fully evaluated. The remainder of the group, or 57 per cent, had disorders which were more fully characterized and managed by appropriate means.

Evaluation of student experience and reaction to the clerkship

From the time of introduction of the clerkship much consideration and effort has been devoted to an evaluation of student reaction to this

TABLE III
DISPOSITION OF PATIENTS
(329 Patients)

	NUMBER	PERCENT	PATIENTS PER STUDENT
Illness Predominantly Functional	95	28.9	6.8
Patients Hospitalized	33	10.0	2.4
Patients Continuing Care in Initial Clinic	115	35.0	8.2
Transferred to Other Clinics	104	31.6	7.4
Referred to Local Physician	18	5.5	1.3
Discharge After Workup	48	14.6	3.4
Lapsed	46	14.0	3.3

as a learning experience. The committee responsible considered it desirable to determine changes of student attitudes as influenced by the clerkship. However, a number of conditions prevented wholly objective analysis. Among these have been difficulties of adaptation of attitude tests for this highly specialized situation, lack of similar information on other groups of students prior to introduction of the clerkship, and changes in approach and technique as instructors began and extended their teaching experience. Although certain assessments are available, it is realized that the procedures used are more subjective than objective and that definitive conclusions relating to the impact of the clerkship on student attitudes are not possible.

Broad and general opinion of the student group is available in curriculum reports submitted as confidential information by each class at the completion of the academic year. The general comment at the end of the first year of the clerkship was: "The clerkship in the outpatient department was considered excellent by the majority of the class. We appreciated the opportunity to see medicine practiced on the out-patient basis." The student curriculum report for the academic year of 1953-54 included the following statements: "Clinics, most felt, were the most worthwhile third of our senior year. - - - We feel that the job of coordination and planning has been remarkably well done."

Similarly, the report for the most recent year, 1954-55, states: "In general a large majority of the members of the senior class feel that the 12 weeks spent in the clinics are among the most valuable they have experienced in medical school. The teaching is considered excellent, the interest in the student is obvious, and the management of patients on an outpatient basis is stimulating and rewarding."

Although these statements are representative of the general reaction, the curriculum reports contained suggestions and constructive criticisms relative to the details of operation of the plan.

A questionnaire was devised and submitted to students at the conclusion of the clerkship. The material covered includes questions relative to the number and type of patients seen and cared for, the number of patients admitted to the hospitals and visited in the home, contacts with and letters written to referring physicians, adequacy of the plan for development of satisfactory rapport and for continued observation of patients, use of social workers and health and welfare agencies, reporting of communicable and other notifiable diseases, and reaction to the types of instruction and learning experience.

When the clerkship was introduced three years ago, there were frequent expressions of uneasiness and dissatisfaction by students because so many of the problems presented were those of early or poorly manifest disease or of functional illness. This was readily understood when it was realized that most of the clinical background of the students was accumulated on the wards of university hospitals, which abound with clinically challenging problems of advanced illness or of exotic disease. An effort was made to stimulate interest in the early recognition of disease and to deal with disorders of functional origin. There seems now to be acceptance of the fact that functional illness represents a significant proportion of the problems faced in practice. Nearly one-third of the group of patients thoroughly evaluated by students in the clerkship

continue to be in this category (Table III). The remainder present disorders which offer opportunities for more specific approaches in therapy. Seldom does a student complete the 12-week period without opportunity for admission of at least one patient to the hospital. The average experience is for three new patients to be hospitalized and some students have had as many as 10 or 12 patients admitted for hospital care.

The questionnaires indicate few problems relating to factors which disturb or inhibit relationships with patients. Shortly after the introduction of the clerkship, there was expression of uneasiness by some students because it was proposed that they serve the same patients in several specialty clinics, thereby seeming to pose as specialists in a variety of fields. This problem proved to be one of attitude rather than of reality and so far as is known no patient has offered this complaint. A disturbing event occurring frequently early in the clerkship was reference by clinic secretaries, nurses or instructors to students as "students" in the presence of patients. In addition, some instructors persisted in detailed questioning of students before patients. Both events disturbed rapport and in several instances patients announced that they came to be treated by "doctors" not by "medical students." Recognition of this problem and requests to clinic personnel to assist in doing all possible to maintain the doctor-patient relationship for the student has eliminated this disruption of rapport.

The replies to parts of the questionnaire dealing with the use of social workers at first gave indication that the students had little comprehension of the assistance offered them. This was further complicated by the fact that two types of social workers are available. The first are workers attached to the separate clinics, whose services apply to patients in those clinics. The others are two social workers, who serve as instructors in the clerkship, and are available to students for general purposes of instruction and consultation on patient problems. The difficulty here was recognized as one calling for the evolution of new teaching techniques and approaches. As these have developed there has been increasing interest and use on the part of the students of the assistance afforded by community agencies and greater comprehension of the wide variety of problems which relate to or derive from illness.

Instructor experience in the clerkship

A chief of service for each clinic arranges for assignment of instructors and plans the teaching in that clinic. Instructors may be from part-time or full-time staff. In most clinics, interns and residents from the affiliated hospitals take the major share of the patient load with the medical student serving selected patients and those specifically referred by the student to himself from other clinics. Teaching procedure utilizes the tutorial system with effort on the part of the instructor to assume the role of consultant in each case. It is apparent that in clinics like those of medicine, surgery, psychiatry, and obstetrics - gynecology the system works most effectively if an instructor has responsibility for no more than two students. However, in others such as dermatology and otolaryngology instructors may well serve a larger number of students. It has sometimes been difficult to inform adequately the large number of instructors involved concerning the purposes and mechanisms of the plan

and to gain their full cooperation. Initially this was attempted by descriptive letters and by meetings of each chief of service with his own group of instructors. However, these procedures were only partially effective and a more important mechanism has apparently resided in the enthusiasm of the students which has contributed much to orientation and to eliciting most effective cooperation of instructors.

Inevitably certain instructors have failed to comprehend the cooperative nature of the teaching program or to accept the enlarged and more important role of the student in the care of patients. In some instances the instructor by training and outlook has found it difficult to adapt to the new emphasis in teaching. Moreover, it has been found that the personality and background of experience of certain instructors is such that their approach to students is too formal and didactic. Still other instructors have failed to demonstrate live interest in their teaching obligations, arriving tardily for assigned sessions or devoting too little time. Recognition of these problems has made it desirable to select new instructors whose interests, time and comprehension of the plan permit more effective participation. On a number of occasions changes have been made by the departments on their own initiative, while in other instances the request for a new instructor has come from the committee directing the Coordinated Outpatient Teaching Program.

The plan attempts to establish a more effective learning experience for the medical student by permitting him to participate fully in the care of patients and to share responsibilities with his instructors. Hence, enlarged opportunity for the student has placed other responsibilities upon the instructor. Representative procedure as practiced in the medical clinic is for the student to be assigned a room, on the door of which is a card bearing his name. There he meets his patients, takes medical histories and does physical examinations. On completion of the work-up he meets his instructor in another room and reviews the findings. The instructor later is introduced to the patient as a consultant and is free to clarify parts of the history and to examine the patient. The student is not questioned or corrected in the presence of the patient, but in a consultation room where diagnostic procedures and therapeutic measures are agreed upon. These then are explained to the patient in full by the student. The instructor must, therefore, make an effort not to interpose himself between the medical student and the patient. It is the duty of the student to write referring physicians, providing summaries of medical records and recommendations. All such letters are carefully reviewed by the instructor and his signature appended.

On the whole the clerkship has given rise to new enthusiasm and interest in clinic teaching and has led to use of less formal teaching procedures and to revitalization of services. It has become increasingly desirable and even necessary for each clinic to consider the broad problems of each patient and to coordinate its effort with those of other clinics.

The student is expected to follow and visit frequently each of his patients admitted to the hospital, although he holds no direct responsibility for medical care of the patient during this period. The student, therefore, is kept informed of developments in the case and is able to resume the care of the patient more readily on discharge from the hos-

pital and return to the clinic. For the patient it assures contact in the hospital with at least one physician with whom there had been prior contact and does much to maintain what has by this time usually become well established rapport. In certain instances it has been of advantage to have the student visit in the home during the period between discharge from the hospital and return to the clinic. Such a visit may be advantageous to the patient in terms of review of the specifications of treatment and to the student in assessing how well the therapeutic procedures are adapted to the patient's needs. Such visits are undertaken only on the advice, and with prior agreement of, the student's assigned instructor in the department of preventive medicine.

Each student is required to select a patient under his care for more detailed study during the course of the clerkship. It is considered essential that the patient be one with a medical problem of particular interest to the student. In this case study an attempt is made to come to more complete comprehension of the impact of illness on the patient and his family, and of other factors which must be considered if treatment and care are to be most effective. The problems are discussed at length with the student's assigned instructor and social worker from the staff of the department of preventive medicine. When the student understands satisfactorily the areas to be explored with possible advantage, he arranges to visit in the home. The information derived is evaluated and efforts made to secure suitable additional assistance for the patient and his family, when these seem to be indicated. The total experience is written up in detail and certain of these cases are discussed in seminar sessions.

Representative of the types of cases selected and offering rewarding experiences have been diabetic patients, in which the student has taken full responsibility for instructing the patient concerning the disease and in urinalysis, sterilization of syringes and injection of insulin. In another instance, a student through contacts with a local health officer, arranged for immediate hospitalization of a patient with advanced pulmonary tuberculosis after the family had been told that a bed would not be available for the patient in a state sanitorium for some months. Another student was able to assist a patient with rapidly advancing diabetic retinitis to accept early training in reading of Braille. A number of students have worked closely with patients who have had cancer of the breast and have offered substantial assistance in the period following mastectomy, informing them and aiding them in obtaining prostheses, and returning at an earlier date to a comfortable and relaxed position in the home and in society. Still another student with an interest in a patient with brucellosis alerted a county health department to existence of the disease in that community. As a result an epidemiologic study was undertaken and an infected herd of cattle designated as the likely source of infection. These are not unusual events and in most cases studied students have contributed in some significant way to improved care for their patients or to correction of existing problems.

The role of the social service workers who serve as instructors in the program has been subjected to frequent evaluation. It is believed that medical students look for the same kind of mature judgment and assistance from these instructors as from their clinical instructors. However, there has been little or no

earlier experience to guide the students in most effective use of the social workers. Although these instructors are available at all times in offices adjoining the medicine clinic and participate in weekly seminar and interview discussions, contacts are likely to be few early in the clerkship. However, as students gain recognition of the assistance and guidance to be given, they use the social workers increasingly, not only in preparation of case studies but in everyday care of patients.

The weekly interview periods with two or three students and an instructor and social worker are informal discussions in which students present a variety of problems. These may relate to medical care, social or financial difficulties, or clinic operation. Often suggestions derive which materially assist the students in caring for their patients. At appropriate times in these discussions information is given concerning local health and welfare agencies which may properly be utilized. In addition, the instructor will occasionally obtain information concerning student attitudes or approach which interfere with proper management of patients. On the whole, these sessions have been most important in maintaining the interest of students and in assisting them in many ways.

Seminar discussions are planned as a teaching activity with free participation of students and instructors. The case and topic for discussion are assigned a week in advance. Bibliographic material, which all students are expected to read, is listed at the same time. Discussions attempt to utilize the interest of the students in a case or disease problem and then to orient this interest in the direction of comprehensive care and to the importance of the disorder as a community health problem. A variety of disease entities are discussed in this manner during the course of a clerkship. Representative and frequently included are diabetes mellitus, hypertensive cardiovascular disease, a common form of malignant disease, syphilis, cirrhosis of the liver, obesity, and peptic ulcer. The value of these sessions is largely dependent on the leader of the seminar and his adeptness at securing free interchange of information and opinion.

Summary

The Coordinated Outpatient Teaching Program introduced into the curriculum of the fourth year at the Washington University School of Medicine has afforded an experience in training in comprehensive and coordinated medical care. It has been received with interest and enthusiasm by students and staff alike. During the three years of operation of the program new approaches in teaching have evolved, which it is hoped will better prepare medical students for patient-oriented rather than disease-oriented medical care. In addition, it has made possible longer and more sustained observation of patients by medical students in the clinics. Through it the students are permitted opportunities to visit selected patients at home and to aid the families of patients to secure assistance from a variety of health and welfare agencies.

Tres años de experiencia, en la Washington University, en el Programa de Enseñanga Coordinada con Pacientes Externos

La Escuela de Medicina de Washington University (Missouri) introdujo en 1952, en su programa de enseñanza, un curso de medicina práctica en el Departamento de Pacientes Externos *(Outpatient Department)* que coordina

los servicios de nueve clínicas y siete Departamentos de la Escuela de Medicina. Antes de esta innovación, se ofrecía a los estudiantes, durante su tercer o cuarto año, tan solo un corto período (de dos a seis semanas) de experiencia con los pacientes no hospitalizados, y raras veces veían a un mismo paciente más de dos veces. El énfasis, como es natural, se ponía en la diagnosis, y así quedaba poca oportunidad para establecer y evaluar los procedimientos terapéuticos. Por otra parte, las clínicas de la Universidad han estado ofreciendo durante muchos años servicio médico a personas indigentes del área metropolitana (St. Louis) y áreas adyacentes, llegando a 170,000 el número de pacientes por año. Pero la falta de coordinación entre las diferentes clínicas y servicios creaba una situación desfavorable tanto para los pacientes como para los estudiantes. Por tanto se nombró, en 1950, un Comité para estudiar los varios problemas y hacer recomendaciones para su solución.

Se determinó que los estudiantes de cuarto año serían los más indicados para ese trabajo, y de acuerdo con las recomendaciones del Comité, se introdujo en el *curriculum* de éstos un período de doce semanas de práctica intensiva en que se asigna a los estudiantes a determinadas clínicas durante la mitad del día. Durante este período, el estudiante asume toda la responsabilidad de un médico, bajo la supervisión de un profesor consultante. En casos en que es necesario referir a un paciente a otra clínica, se hace ello de modo que el estudiante se encuentre presente también allí, y así se logra establecer una relación menos esporádica entre el estudiante y el paciente. Al estudiante se le induce, además, a considerar los factores sociales y emocionales en su estudio práctico de las enfermedades, y a tener éstos en cuenta para los propósitos terapéuticos. Se espera de ellos que mantengan contacto con los pacientes durante los períodos de hospitalización, e incluso que los visiten en sus casas. En todas sus actividades fuera de la Clínica, los estudiantes cuentan con los consejos y dirección de un profesor, así como también de un empleado de la Asistencia Social, del Departamento de Medicina Preventiva (el cual Departamento tuvo un papel preponderante en la organización del nuevo programa) y con ellos se reunen regularmente cada semana. El programa de doce semanas se lleva a cabo con grupos de estudiantes cuyo número varía entre siete y treinta, de acuerdo con las diferentes fases. En las tardes, los estudiantes asisten, durante las primeras seis semanas, a una de las clínicas asignadas,y a otra diferente durante la segunda mitad del período. Una tarde cada semana se dedica a seminarios y a entrevistas con los miembros del Departamento de Medicina Preventiva, y otra tarde se reserva para revisar el historial de los casos tratados o hacer visitas a casa de los pacientes; además, todo el grupo se reune una vez por semana para discutir los problemas generales en el tratamiento de pacientes externos. Los estudiantes tienen la obligación de registrar todas sus observaciones en los casos que tratan y de conservar además hojas con información somera referente a cada nuevo paciente, en las que se incluyen no solo datos clínicos pertinentes, sino también los datos relacionados con los particulares problemas sociales y de medio ambiente.

El nuevo programa que, durante los tres años de su funcionamiento, ha sido acogido con interés y entusiasmo tanto por los estudiantes como por la Facultad, ha servido, entre otras cosas, para orientar al futuro médico más hacia el paciente que hacia la enfermedad.

Seperatas de este artículo, en español, podran obtenerse si son solicitades por un minimum de 25 lectores.

Experiences in Teaching Child Psychiatry to Fourth Year Medical Students

MURRAY D. LEWIS, MYRTLE LOGAN AND ALBERT W. SULLIVAN

THE introduction of the teaching of dynamic psychiatry into the medical school curriculum has tended to bring child psychiatry out of its former isolation as a specialty. Accordingly, methods have had to be devised for teaching child psychiatry not only to future child specialists but also to other physicians in training. This paper describes the teaching exercises evolved by the pediatric-psychiatric staff at this medical school for teaching child psychiatry to fourth year medical students.

Before describing the teaching program in child psychiatry, we must look first at the preparation that the student brings with him to this experience. In the University of Rochester School of Medicine and Dentistry, the department of psychiatry is one of the major departments and functions as an integral part of the medical school and university hospital. The undergraduate teaching in psychiatry is a four year program. This department attempts to equip the undergraduate medical student with a reasonable knowledge of the basic factors of human nature and of the society in which we live, so that through repetitive clinical experience the student will become increasingly familiar with the most common and the most important emotional problems of patients with which he will be confronted later as a physician. It is not the intention to teach special skills or techniques in the undergraduate period as this is considered the more proper responsibility of the graduate training period.

In the first year, students meet weekly with a member of the department staff and attempts are made to help the students evolve for themselves a comprehensive concept of human biology in which psychologic and social factors are included. In the second year a more systematic review of the essentials of psychodynamics and psychopathology is presented to the students together with frequent clinical demonstrations. Central in all of this are concepts of growth, development, adaptation and symptom function.

In the third year students are given serious clinical responsibility for the study and care of psychiatric patients under the supervision of both house and senior attending staffs. In addition, liaison activities afford them similar clinical bedside experience in pediatrics and medicine.

In the fourth year students are assigned adult out-patients under senior tutorial guidance. They also visit and study in-patients in the Rochester State Hospital and par-

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ticipate in teaching conferences with clinical psychologists and social workers. It is during this fourth year assignment that students participate in the teaching exercise that is described.

Our experience leads us to believe that the student's ability to use this fourth year exercise in pediatric psychiatry depends in great part upon this previous extensive psychiatric background.

Specific teaching goals

Our goals in the teaching of child psychiatry to medical students are of course those of the department of psychiatry in general. There are, however, some specific objectives which work with children gives us a chance to achieve. (1) We aim to bring home to the student vividly that his child patient is an integral part of a functioning family, and that in fact the child's symptoms and behavior can be viewed as an adaptation to the stresses of life within this family. (2) Recently much attention has focused on the effect of a doctor's own personal reactions on his patient. As Dr. Levine has pointed out, this is not new, for it is the essence of the Hippocratic oath. How to assist the student toward some awareness of such reactions on his part, be they counter-transference feelings or reality-based reactions, and the management of such feelings, presents a knotty problem to his psychiatric instructors. This work with children and parents often presents dramatic opportunities for this. (3) The exercise attempts to give the student some knowledge of the psychiatrist's techniques with children and their parents, and provides a glimpse of why there are some children's problems the psychiatrist cannot modify appreciably, and what some of these may be. It gives him some idea of how to make intelligent referrals to a psychiatric consultant and how to make the best use of a psychiatric service for diagnosis and treatment. (4) He is given additional experience in the work of other child specialists; the social worker, psychologist, teacher, courts, nurse, etc. (5) The opportunity frequently arises of giving the student some experience with community facilities that serve the needs of children.

Owing to the differences in available case material not all of these aims, of course, can be fully realized in every case.

Methods of teaching

Students are taught in groups of two, in four three-hour sessions. Because of limitations of time, one-half of the class has assignments in a special clinic in the pediatric OPD, where the emphasis is on the supportive treatment of disturbed children referred from the regular pediatric clinics. The other half of the class studies children in the psychiatric OPD. In the following we shall confine our discussion to the teaching program in the psychiatric OPD.

This teaching program in the psychiatric OPD has evolved over the past six years. This evolutionary process has been somewhat similar to that in other clinics[2]. When we first began, the students, four in a group, sat in the room and observed while the instructor conducted the interviews first with the parent and then with the child. From this we progressively evolved, as the instructors gained more experience, into a program in which the student participated more and more actively and

responsibly, at times conducting some of the interviews in the presence of the instructor and his fellow-students. Now, as we shall describe below, the students conduct the interviews alone, but under close and careful supervision.

At the first of his four sessions each student is given a printed outline of the clinic procedure. In preparation for the study, the mother of the patient has been interviewed one or more times by the psychiatric social worker who has taken a brief history and has helped the mother prepare herself and her child for the study. This and other pertinent data are available for the student at the first session. The mother is then seen briefly by one student at the first session. The child is seen by the other student two or three times at following sessions. In the last session the students, instructor and social worker confer to formulate diagnostic opinion and future plans. The mother returns to the social worker for further planning.

A case example will now be cited in moderate detail to illustrate this teaching exercise. The reader should keep in mind that for the sake of brevity we have focussed the description of this case example almost entirely on our efforts to help the student towards understanding the patient as a person; hence we have purposely omitted to describe how we use each case to discuss more formal psychiatric topics such as the psychopathology of childhood, problems of infant rearing, psychiatric syndromes as they occur in children, systematic history-taking, etc.

A case example

Billy W. age 9 is the oldest of four. In the social worker's intake interviews, the mother's complaint was Billy's hostile behavior to his siblings, especially the next older one, a boy of six. Billy also picks on other children and gets along poorly in school. There is a history of long-standing marital discord. Father was away in the service during Billy's infancy, and soon after he returned the second child, whom Billy resents so much, was conceived. Mother also complained that her husband works long hours and spends little time at home even when he is off work. Father has a physical handicap, namely webbing of his fingers, for which he has required a number of operations. A recent physical examination of Billy was negative. Psychological test reports were not yet available.

Before the first appointment with the mother this data was discussed by the psychiatrist and the students. Student B elected to see the child whereupon Student A was assigned the mother. Billy's rage against his next younger sibling was readily understood by the two students as a reaction to the arrival of his brother when Billy had previously been the only child and had his mother entirely to himself. Then Student B pointed out that Billy had been displaced by the father even before he had been displaced by the younger brother and it was not long before he went on to suggest that Billy's real hostility might be to his father. Student A responded that there was not much evidence for this since the mother had told the social worker that Billy always obeys his father immediately; in fact he is more likely to disobey his mother than his father. It was suggested that the reason for this could be that Billy is more afraid of his father than of his mother and therefore doesn't dare to disobey him. At the same time perhaps he wants to relate to his father more closely. It was now near to the time of the mother's scheduled appointment so the psychiatrist and Student A who was to interview her, discussed his forthcoming interview with her; he was to allow her simply to give the history again and in view of our discussion, he was also to inquire into the boy's relationship with his father.

Student A's interview with the mother now followed and through the one-way screen with its sound attachment, the psychiatrist and Student B could see and hear her as a weak-voiced woman

with a long-suffering attitude. She described her husband complainingly as harsh and strict with Billy—"doesn't play with him, doesn't take him anywhere." One felt that she meant by this that he acted the same to her in being non-supportive and undependable. She brightened somewhat during the interview as she felt the student was interested.

In the discussion that followed, Student A who had interviewed the mother described her as a "weak sister." He thereupon began to wonder whether the husband's behavior was in part a reaction to the kind of wife he had. On the other hand discussion arose as to why the husband seemed to react so intensely to his dependent wife. Perhaps his physical handicap causes him to need more than the usual amount of warmth and acceptance.

Student A was now told to record for the hospital chart his interview with the mother. His notes proved to be mainly a record of the conversation between the patient's mother and himself and did not include the material which evolved in the discussion which followed the interview. The psychiatrist had already noted in the previous discussion period that this student was the less active of the two. The psychiatrist, therefore, at the beginning of the next teaching session a week later, reviewed the group's thinking about the mother thus far. Then since Billy was scheduled to be interviewed in three-quarters of an hour, the group discussed how to meet the child since this now seemed to be the principal focus of the students' interest. Student B who was to interview him, was anxious. His main concern was what to say to Billy when he first saw him. After discussion Student B finally decided that he would bring the subject up rather early by asking Billy if he knows why he is coming, and then if Billy couldn't answer he would tell him himself briefly and add that maybe he could help him with his troubles. He would further tell Billy he would be coming twice, each time for about 45 minutes.

In actual fact it turned out that when asked why he was coming, Billy volunteered that his brother and others pester him so he gets mad and hits them back. He then told of an episode in which it seemed to the observers (the psychiatrist and Student A) that he was obviously in the wrong since the brother had really done nothing to injure him and yet he took what his brother did as an injury and retaliated. Student B seemed taken aback by this frank aggression. He asked some questions about whose fault it was implying that it was the patient's fault. However, at this point the boy mentioned his father and Student B seemed to recover himself as it apparently struck him that the boy was angry because of the father's attitude to him. He thereupon asked the boy, "What kind of a guy is your father?" The patient seemed surprised that such a question would be asked, and apparently encouraged by this he began to complain that father worked everyday and Sunday too. He then went on to tell how people pick on him and how on one occasion he was a good boy and wasn't rewarded. He followed this by talking about his teddy bear which he likes to take to bed with him, ending with, "Father says I've got to get rid of him." Student B again was permissive about the child's hostility to the father for he asked, "When father says you can't have something, what do you do?" Patient replied, "I have to go without." Student: "How do you feel?" Patient: "Mad." Student: "What do you do about it?" Patient: "Nothing much I can do about it." Billy then expressed a wish for a real gun and blamed father for not volunteering to buy one for him. At the end of the time, Billy obviously wanted to remain longer and it seemed as if Student B could not bring himself to say definitely, "Our time is up."

In discussing this interview, the psychiatrist suggested that when Billy complained people pick on him, some recognition be give to his hurt feelings, such as, "It makes you feel bad when somebody pesters you" or "You wish your brother didn't do things like that to you." The psychiatrist then went on to comment on the technical therapeutic error in suggesting at this point that the patient might be at fault. Student B denied that he was taken aback by the boy's aggression, and in fact could not really remember whether he had said anything about "fault." Feeling that this suggestion of counter-transference reaction was more than Student B could tolerate at this point, the psychiatrist

turned instead to Billy's response to "What kind of a guy is your father?" saying that it seemed to be a new experience for Billy to be permitted to appraise his father. This evidently struck a responsive note in the student for he beamed. He could then accept a comment that it was hard for him to end the hour because he felt and responded to the boy's wish to stay with him.

In his second hour, the patient complained that his brother picked on him with a stick. The student, following the psychiatrist's suggestion, said something that implied sympathy with him in this. The patient immediately responded, "Oh, I don't care what he does 'cause I can get him into trouble." However, he immediately switched to a description of a boy who was sent away for breaking windows and robbing stores. This boy had been sent to Florida "clear outside the USA." Towards the end of this hour, he began to complain again that father didn't give him a gun. The student had less difficulty ending than the previous time, saying to Billy who was playing with a toy gun, "Our time is up, but take a couple of last shots."

In discussing the second interview, the psychiatrist pointed out how one aspect of Billy's problem was shown clearly by his asking for help, "Brother picks on me with a stick" but then when the student responded to this plea, Billy got anxious and withdrew behind his character defense of pseudo-independence and denial of need for help. . . . "I don't care what brother does." The psychiatrist added that Billy went on, however, to evaluate this pseudo-independent, hostile defense in more or less the following terms: "Maybe he, like the other boy who caused trouble, will get 'sent away,' in fact maybe his aggression will cause him to be banished into outer darkness, away from his motherland, 'clear outside the USA.'" Student B replied, "Gee, I never saw that. I just thought he didn't know geography."

In the final conference about this case, the emphasis shifted again to what approaches could possibly be made to this family. One of the students suggested that we call the father in right away and talk to him. The psychiatrist commented that mother had complained a good deal about father; if her husband were invited to come to the clinic at this point, this might confirm her exaggerated sense of injustice about his behavior. This was understood at once by Student B. Student A was less willing to accept this interpretation. It was apparent that the difference in the acceptance of the interpretation was based in considerable part on the differing roles the two students had taken in the case study. It was evident Student A had some identification with the mother after interviewing her and could not recognize this as clearly as Student B who seemed more objective.

It is beyond the purpose of this paper to discuss in detail the further disposition and treatment of this child and his family. We do wish to point out the considerable interest both students showed in the further care of this child. In this specific instance Student B who had interviewed the child asked questions about how soon the social worker would see the mother again, how soon it would be advisable to interview father, who would work with Billy. He also asked searching questions about when and why one worked with parents and when one worked directly with children.

It was interesting that on the other hand Student A's questions dealt more with the more impersonal aspects of Billy's problem: for instance he was concerned with certain minor physical symptoms. It was also revealing of his unconscious struggle to remain detached from the case that on reading the Rorschach test report, which was now available in this fourth and last session, he expressed the fear that one might come to depend on it exclusively and disregard the clinical observations.

Special values of this method

The special value of this teaching technique is that each student is required to be an active participant and finds it much more difficult to remain a passive, detached observer. The one-way screen has facilitated this method. It enables a child and student to be alone without the supervisor. This makes it easier for the child; it also promotes initiative and responsibility on the part of the student. Yet, at the same time, it enables

the supervisor to intervene if necessary. The value of this intervention was illustrated by the case of a male medical student who was interviewing a very passive, 13 year old girl who had been referred for extreme obesity. The student kept trying to talk with this girl who sat motionless, frozen in her chair, unable to respond except for occasional monosyllables. The student's comments to her began to take more and more the form of questions, and a slight note of irritation began to creep into his voice. At this point the instructor knocked on the door; the student excused himself to his patient and left the room for a five-minute conference with the supervisor and the other student. As a result of this conference, when he returned to the interview, he said to the girl, "Kathy, I have been asking you lots of questions and I know that's hard for you, so from now on I'll just sit quietly with you, and you do whatever you want." She looked at him for the first time, doubtfully, but as he settled back in his chair quite relaxedly she picked up some clay, began to mold it, and finally made it into a figure which she showed him and even made some comment about it, with an exceedingly striking change in the whole interview atmosphere.

It is not uncommon for the student himself to interrupt the interview in order to discuss a point briefly with the observing supervisor. The screen also makes it possible for the observing student to participate; he studies the interview as it progresses and makes notes. Following discussion with the instructor, each student writes a report of his interviews in the permanent hospital record. This signifies that his contribution is not artificial, but rather a real service.

Students do not participate or profit equally; this is obvious from the case illustration. The more interested, active student usually elects to see the child. The question arises as to whether the instructor should assign the child to the more passive student as a means of eliciting more participation by him. We have not done this. We view this passivity as a probably necessary defense, and feel that it might be nonproductive for such a student to force an exposure to a disturbed child. Another factor in the differing responses of the students may be the counter-response of the psychiatrist to the student's interest or disinterest; this may have happened in the case described.

A student, even one who has elected to see the child, needs considerable guidance in order to deal with his own and the child's anxiety. If the instructor does not sense and deal with the student's anxious anticipation of his first direct interview with a child patient, the student may have to withdraw defensively from the stimulus of the learning situation. Our students, however, as previously described, have the initial advantage of at least three years background in psychiatry. This previous training of course enables them to understand dynamic material, but it has an additional value as well. Since by this time they have largely settled the initial anxiety which psychiatric case material arouses, they are generally able to approach the case with reasonable confidence and self-esteem. This confidence is essential in order for a student to be observant and able to tolerate constructive criticism.

The student's capacity to use criticism because of his previous psychiatric training is illustrated by the following case of a passive masochistic mother who referred her

14-year old daughter because in the last year or two the latter had changed from her former conforming, affectionate behavior to sporadic and frequently ill-timed rebelliousness. The medical student, who in this instance was a woman, in interviewing the girl did not question the girl's statement that her home life with her mother was utterly tranquil and loving; instead she responded by herself being smilingly sweet, very careful not to upset or offend the patient. In fact, she even mentioned some of her own experiences to the patient, as for example: Patient: "No, I don't belong to any clubs; I go to Christian Endeavor meetings." Student: "Oh that must be fun. I belonged to one once—we had picnics"—and went on to describe her enjoyable experiences.

In the discussion of this that followed, the supervisor pointed out to the student that for some reason she had had a need to interpose her own attitudes rather than ask the patient how she felt about it. It was suggested to her that she had a specific need to keep the interview tranquil and uncontroversial. The student was able to think about this suggestion in the framework of her previous psychiatric training about the universality of transference and countertransference phenomena. In the second interview, though she had to continue with some giving of her own experiences, she did this in a more purposeful way so they were no longer only happy experiences, and she combined this with questions which gave the patient a chance to voice discontents and dissatisfactions. The change was far from total, but certainly much less time was spent in the second interview in compulsive compliance with the patient's defenses and much more in planful interviewing.

It is obvious that this teaching technique depends on the presence in the clinic of a very competent psychiatric social worker who must not only spend considerable time on intake of these cases, but also have time to deal with the cases after they have been studied in this way by the two students and the psychiatrist. Obviously too it requires considerable psychiatric teaching time, since each case, in addition to time actually spent with the students, requires preparation as well as time for discussing both old and new cases with the psychiatric social worker. Finally, this teaching technique means that we use the limited time assigned to child psychiatry to present to the student only one case; but we believe this has the advantage of offering every student a relatively intensive insight into that one case and, for the student who can use it, it offers the opportunity for a learning experience of real emotional impact.

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Métodos de enseñanza de la Psiquiatría Infantil a los estudiantes de Medicina de cuarto año

En este trabajo se describen los métodos, desarrollados y aplicados por el Departamento de Psiquiatría Infantil de la Escuela de Medicina de la Universidad de Rochester, para la enseñanza de los estudiantes del último año de Psiquiatría (el estudio de la Psiquiatría abarca un programa de cuatro años en esta Universidad, en la que el Departamento de Psiquiatría es uno de los más importantes de la Escuela de Medicina). *Fines.* Esta enseñanza (que, desde la introducción de la Psiquiatría dinámica en el *curriculum* de las Escuelas de Medicina de este país, ya no está

limitada a los futuros especialistas) tiende a lograr, aparte de los fines generales de la enseñanza psiquiátrica, los objectivos siguientes: 1) inculcar a los estudiantes la idea de que un paciente infantil es parte integral de la familia y del funcionamiento de ésta, y que los síntomas del niño deben ser considerados en relación con sus esfuerzos de adaptación a las tensiones prevalentes dentro del grupo familiar; 2) ayudar a los estudiantes a advertir—y tomar en consideración—el efecto que sus propias reacciones pueden producir en los pacientes; 3) impartir un conocimiento de las técnicas psiquiátricas empleadas con los niños y con sus padres, así como del uso inteligente de los diferentes servicios, comunales y otros, disponibles para diagnosis y terapía; 4) adquirir el conocimiento necesario de los trabajos y funciones de otros especialistas en ese campo, tales como los psicólogos, empleados de la Asistencia Social *(social workers)*, maestros, enfermeras, tribunales juveniles, etc. *Métodos.* Los estudiantes del cuarto año de Psiquiatría (los cuales poseen ya un conocimiento de los problemas emocionales más comunes y frecuentes en nuestra sociedad) son divididos en grupos de dos y trabajan en cuatro sesiones de tres horas cada una. Debido al tiempo limitado, la mitad de la clase es asignada a una clínica especial de la sección de Pediatría de los pacientes externos *(Pediatric OPD)* del Hospital de la Universidad, en la que se pone el énfasis en un tratamiento auxiliar de niños perturbados enviados por la Clínica Pediátrica regular. La otra mitad lleva a cabo sus estudios en la sección de Psiquiatría para pacientes externos *(Psychiatric OPD)*. El presente trabajo se limita a la discusión del entrenamiento de este último grupo. El programa de enseñanza en esta sección ha sufrido algunos cambios en los últimos seis años. El más notable consiste en que el estudiante ha dejado de ser un mero observador, participando ahora más directamente en las entrevistas con los niños y con sus padres, a veces hasta el punto de conducir él mismo estas entrevistas bajo la supervisión de su profesor y en presencia de otros estudiantes.

Mediante la exposición de la historia de un caso particular, enfocada especialmente a demostrar los esfuerzos del profesor a fin de encaminar al estudiante hacia una comprensión más plena del paciente como persona (omitiéndose deliberadamente la descripción del modo en que se usa cada caso para discutir con los estudiantes los temas generales de Psiquiatría), los autores ilustran los procedimientos de enseñanza que, a través de una participación activa, capacitan al estudiante para adquirir un íntimo conocimiento de las fuerzas dinámicas que obran en la relación entre niño y padres. La experiencia psiquiátrica previa es un prerequisito esencial para este tipo de ejercicio educativo.

Seperatas de este artículo, en español, podran obtenerse si son solicitades por un minimum de 25 lectores.

The Function and Place of the History of Medicine in Medical Education

ILZA VEITH

ABRAHAM FLEXNER once defined medical education as not so much a matter of medicine as of education. In spite of the increasing vastness and complexity of medical knowledge which must be absorbed and integrated by the present-day medical student, Flexner's statement has lost none of its validity. Yet, for most medical students the process of formal general education ceases with their entry into medical school, and for most physicians the opportunity of acquiring any but specialized scientific training ends at the moment they receive their M.D. degree. Thus, so far as education in the broad sense is concerned, the majority of physicians draw throughout their lives on the store of formal education of their premedical days. Nevertheless, the physician is known as the doctor, the "learned man," and not as "medicus" in the restricted definition of his function; and while the community that thus refers to him may not be aware of the literal meaning of the word, it accords to him the respect that is due the scholar as well as the healer.

To be sure, there are and have always been men of great cultural background among physicians. Figures like Sir William Osler, William H. Welch, James B. Herrick, Clifford Albutt and Harvey Cushing, though outstanding, are by no means unique. Their humanistic predilections, matched by their great medical competence inspired a lasting appreciation of general learning in their own students. However, neither Osler nor his eminent colleagues were able to fill all the gaps that the previous education had left open.

A comprehensive educational background would seem essential in medical practice where the physician's personality and general wisdom are frequently as incisive as his professional skill. Yet, it is much easier to deplore the educational limitations imposed by the rigorous schedule of modern medical training, than to make realistic suggestions towards the inclusion of cultural subjects into an already overcrowded curriculum. Perhaps the only solution in this dilemma is the introduction of a subject that by its very nature and contents relates the humanities and the social sciences with the field to which the student will devote the rest of his life. Thus, the history of medicine would seem a natural choice.

Importance in the curriculum

The value of medical history as a cultural subject is considerable, but there are other—and equally significant—functions, which should make it indispensable in a well-rounded medical curriculum. Actually, to non-physicians it must appear surprising

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that of all professions medicine can be taught without a firm basis of its historical development. Philosophers, even if they specialize in 20th century existentialism, are required to be familiar with the thoughts of earlier thinkers in order to grasp the full meaning of their own philosophical persuasion.

Musicians could hardly aspire to true artistry without a knowledge of the music of the past, nor should a painter or sculptor dare venture forth without having studied the old masters. Medicine, too, has been termed an art, and from Hippocrates to Osler, over a span of two-and-a-half millenia, the physician emphasized his artistry and was thus keenly aware of his artistic heritage. But with the passing of Osler and his contemporaries, the art of healing has given way to the science of medicine, which sometimes appears to think of itself as having been generated spontaneously and as being without a history. Even the heated debates that used to be carried on for a decade or two in this century —they were generally entitled: "Medicine: Art or Science"—have almost entirely ceased.

Instead it is said that the analogy of the doctor to the musician and the patient to the audience has no validity, for the physician, unlike the musician or the artist, cannot draw on ancient medicine; and the patients, unlike concert and museum audiences, would revolt against treatment by means of ancient precepts. Of course, there is some truth in this statement. With considerable assistance from the press, radio and television, most patients have come to expect treatment with drugs and devices that were news in this morning's paper. But at the same time, many patients bewail the impersonal attitude of their scientist physician, his preoccupation with their demonstrable lesions and his apparent lack of concern for them as total human beings.

Here, a familiarity with the Hippocratic writings, the works of Sydenham, Boerhaave and Osler, just to name a few, might temper the modern medical student's major preoccupation with scientific technology. But these works and those of other great physicians of the past contain more than this one message for the young physician. In studying the long development of ideas that have come to fruition only recently, he will learn to appreciate the centuries of thought and the personalities of the many thinkers that have contributed to each achievement; and in reading about the panaceas of the past that failed to stand the test of time he will find comfort for the disappointments that are unavoidable in his own researches and in those of his colleagues. He will observe the shift of medical ethics to the medical etiquette of the present day, and the changes in society, brought about by urbanization and industrialization, that have made medical economics and public health increasingly significant adjuncts to the practice of medicine.

In accordance with these changes, medical history itself has become a dynamic discipline with a systematic rather than an episodic orientation. This change has obviated several approaches formerly used by medical historians in presenting their subject. One of these was a pragmatic narrative of discoveries, inventions and misconceptions, simply a history of the errors of the past, catering to the reader's pride in his own superior accomplishments. Another, and entirely opposite type of historical presentation was based on hero worship and

designed to instill humility in the reader. In stressing the unfailing wisdom of the ancients who had said everything, it implied a denial of further progress.

Within the past decades, however, medical history has given up its emphasis on chronology, names, anecdotes and detail. Instead it has begun to establish mutually fruitful alliances with other fields. In striving to enrich the behavioral sciences with insights into the past, the medical historian has gained from this connection an enlarged field of vision and much new methodology. In analyzing medical developments the historian now draws on the discoveries of the paleopathologist, and on the work of the anthropologist. He makes use of the methods of sociological research, economic findings and the studies of the behavioral sciences for his analysis of individual and group behavior of the past. It is interesting that medical history broadened its scope towards the social sciences at about the same time when many physicians turned towards scientific specialization and relegated the patient as a total social being to professions that are ancillary to medicine. And yet, by the definition of its functions and tasks one would assume that medicine itself should perhaps be the most social of all social sciences.

The prevention of disease and death, the restoration of health, the physical and mental rehabilitation of the patient, and finally, the patient's adjustment to chronic disease, are tasks of a social as well as medical nature. The study of their evolution in relation to the medical, religious and even political concepts of different periods in history helps clarify medical attitudes and responsibilities of today. Of similar socio-medical significance is the physician-patient relationship, which is perhaps most significantly expressed in the field of psychiatry. An awareness of the changes in this reciprocal relationship should add to the modern physician's understanding of his own place in society.

In dealing with these aspects and the continuity of search and achievement, the history of medicine also serves as one of the few remaining unifying links of the healing art. Thus, it helps to counteract, in some measure at least, the isolation and the threatening cessation of communication among the multitude of nearly autonomous and often competing specialties.*

The practical values

For those who would deny the need for a subject not immediately useful to medical practice, it should be stated emphatically that the history of medicine is not devoid of practical values. In some cases it has led to tangible rewards, resulting from the exploitation of therapies and remedies that have been lost with the passage of time. Many such have already occurred. From among these mention may be made of quinine, cocaine, ephedrine and the most recent find, rauwolfia serpentina, the "snake root plant" that has added so much to our modern pharmacopoeia. A systematic study of the history of medicine would have revealed a number of practices that had been long in use before they were "discovered" for the second time. The ancient and medieval method of treating goitre with decoctions of seaweed antedated by millenia our recognition of the effect of iodine on the thyroid gland. Extract of toad venom was given to

*Alan Gregg: "Communication and Great Medicine," *J. Med. Educ.*, 28:1, 1953, p. 17 ff.

patients centuries before the isolation of bufagin. The so-called "backward" peoples used mildewed bread for the cure of festering wounds long before the civilized world discovered penicillin; and chaulmoogra oil, until recently the only therapeutic agent in the treatment of persons with leprosy, has an unbroken history in India that antedates the Christian era.

It is clear, however, that the study of medical history has values that go far beyond the tangible assets for modern medical practice and beyond the enjoyment of the individual history-minded physician. Thus, the feeling for the past is not only desirable but necessary for those who wish to practice in foreign countries. While this is true even for the physician who goes to another country within the sphere of Western civilization, historical knowledge is absolutely mandatory for those who wish to bring Western medicine to non-Western peoples. Very little can be done by forcing the blessings of 20th century medicine on an unwilling population; but much can be achieved by a subtle blending of indigenous beliefs with modern practice.

Finally, and incidentally, a very important function of medical history is its direct contribution towards the literary appreciation and literacy of medical students. In general, medical students may find little occasion to study and appreciate the style of famous writers. But the beauty of style and clarity of expression of the great physicians of the past rarely fail to impress the modern reader. Term papers, seminar reports and book reviews, based on the classics of medicine often bring about a stylistic improvement on the part of the student that is as notable as it is unconscious. By means of such exercises and almost imperceptibly the methodology of good scientific writing can be taught. This is particularly valuable today, when frequent complaints are heard about the students' difficulties with the writing of case histories. In the final analysis, the requirements for the composition of a medico-historical essay and the preparation of the history of an individual patient are almost identical, inasmuch as they are both expository presentations of sequential events, based on written or oral evidence which the student himself must gather. Few clinical teachers have the time or inclination to give instruction in this supposedly basic requirement of the medical profession and the support of medical historians in this field should therefore be welcome.

Place in the curriculum

Now the question arises as to where the history of medicine will fit in an already overcrowded medical curriculum. Needless to say, each medical school must solve this in its own fashion. It is interesting, however, that a survey undertaken in 1951 disclosed that 37 American and 7 Canadian medical schools had made some provisions for the teaching of this subject.* It is equally enlightening that there is practically no uniformity in the manner and quantity of medico-historical instruction. The following statistical review will be indicative of this diversity:

Number of Medical Schools surveyed:	
United States	79
Canada	7
Total	86

*"American Association of the History of Medicine: II. Survey of the Teaching of the History of Medicine in American and Canadian Medical Schools." *Bull. History of Medicine*, 26,6, 1952. Pp. 562-578.

Organized Departments or Divisions of History of Medicine:	
United States	17
Canada	5
Total	22
Courses in the History of Medicine given by other departments United States:	
Department of Medicine	8
Department of Surgery	3
Department of Preventive Medicine	1
Department of Anatomy	1
Department of Associated Medical Subjects	1
Total	14
Canada—none.	
Courses given outside of Medical Schools:	
United States	5
Courses given—specific department of instruction not listed:	
United States	1
Canada	2
Total	3
Courses required:	
United States	20
Canada	6
Total	26
Courses elective:	
United States	17
Canada	1
Total	18
Total number of schools offering organized courses in History of Medicine:	
United States	37
Canada	7
Total	44

No doubt, the medico-historical picture has changed somewhat since this study was undertaken; moreover, it is unlikely that even at that time the survey was able to uncover all the activity in the field, for many of the historical courses and lectures given by clinicians and medical scientists as introduction to their specialties are not listed in the medical school catalogues. But even if this is taken into consideration and added to the 44 medical schools that have indicated some historical activity, it still cannot be considered an adequate coverage of the subject. Furthermore, by far the majority of the medico-historical offerings are limited to general survey courses of 8, 10, or even 12 lectures, given once a year. Such courses are certainly preferable to no instruction at all, but they do not involve student participation and rarely arouse more than passive and temporary interest.

It can often be observed that the student's appreciation of a course is based on its status within the medical curriculum. Medical history, therefore, should be given the importance of other courses, and it should be offered during those hours of the day normally allotted to medical instruction, rather than in the late afternoon as it is often scheduled. An examination or other evidence of active participation should be required from those who register for the course and credit should be given for its satisfactory completion. It would seem that the quality of the participants and the fervor of participation would be superior if medical history is given as an elective course. On the other hand, if presented as a required subject, it may well awaken an hitherto unrealized interest. At the University of Chicago the recognition of medical history as part of the curriculum has done much towards making it a desirable field of study. Here five to six elective courses on various aspects of the history of medicine are offered each year. Like all other electives they carry ¼-1 credit, depending on the nature of each course. Significantly, some of the most active participants —generally students in their senior year—do not even take these courses "for credit."

Success determined by teacher

No matter whether the history of medicine is offered as an elective or

a required course, its success is not really determined by administrative considerations but by the teacher. Inevitably, this leads to the question as to who should teach the history of medicine; should it be a "professional" medical historian, or a physician who has made this field his avocation? The former combines a medical background with historical training, and has taken graduate work or an advanced degree in medical history. Actually, there are, at present, only very few persons who fill these requirements, although three or four universities offer graduate programs in this field. But medical history can be taught equally successfully by physicians who have made this field their hobby, or rather, their avocation. Often they begin this study in connection with the development of their own specialty and then extend their interest far beyond it. It is quite certain, however, that more persons will feel impelled to acquire advanced medico-historical training, once the subject becomes an integral part of all medical curricula.

Because I am a medical historian and hence, perhaps, suspect of bias and of overstating the importance of my field, I leave the concluding statement to Dr. James B. Herrick, a great clinician and a true "amateur" of medical history. In the introduction to his "Short History of Cardiology," to whose development he personally had made such significant contributions, Dr. Herrick stated: "The history of medicine leads to a better understanding of the present status of medical knowledge, making clearer what is definitely established and what is still in the stage of theory of uncompleted experiment. It teaches the student the importance of going for information to monographs and original articles. It may lead him to read medical biography. Once acquired, this habit is more than an ephemeral pastime. As an avocation . . . . it may prove to be one of the delights of old age."

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La Función y lugar de la Historia de la Medicina en la Educación Medica

Los médicos han de poseer un sólido fondo de cultura porque muchas veces, en el ejercicio de su profesión, necesitan amplios conocimientos generales además de los profesionales. Sin embargo, la mayoría de los estudiantes de Medicina dan por terminada su educación general en el momento en que entran a la Escuela de Medicina. La enseñanza de la Historia de la Medicina, por la estrecha relación que ésta tiene con las Humanidades y ciencias sociales, tal vez ofreciera una solución para ese problema, pero el hecho es que la ciencia médica es la única que puede, y frecuentemente suele, ser enseñada sin tener en cuenta su desarrollo histórico. Desde el punto de vista puramente práctico, es cierto que, debido a los enormes progresos de la Medicina en los tiempos modernos, los preceptos antiguos no tienen, en un sentido estrecho, gran valor para el médico en el ejercicio de su profesión (aunque los conocimientos en el campo de la Historia dieron en algunos casos incluso resultados prácticos, como sucedió con algunas drogas de las que recordamos la quinina, y la cocaína, así como

el "descubrimiento" más reciente de la *rauwolfia serpentina)*. Pero un estudio del largo desarrolla de las ideas cuyo fruto se está recogiendo hoy, enseñara a apreciar el pensamiento y genio de muchos hombres de los siglos pasados, y hará que nos demos cuenta de los cambios en la ética profesional que tuvieron lugar simultáneamente con los cambios sociales, así como de la importancia de las condiciones económicas y del estado de la Salud Pública en la práctica de la Medicina. De acuerdo con esos cambios, la Historia de la Medicina se ha ido convirtiendo en una disciplina dinámica, orientada hacia lo sistemático más bien que hacia lo episódico. En las últimas décadas, se ha dejado cada vez más de enseñarla poniendo el énfasis en fechas, nombres y anécdotas: hoy se acentúa sobre todo su conexión con otras ramas de la cultura, ofreciendo así al estudiante una visión más amplia del pasado y del presente. Al analizar los desarrollos de la Medicina, se tienen en cuenta los descubrimientos en el campo de la antropología; se hace uso de los métodos de la investigación sociológica y económica, y se aprovechan los estudios de Psicología en el análisis de actitudes individuales y de grupos. Además, la Historia de la Medicina sirve para restablecer los vínculos unificadores entre las diferentes ramas de la ciencia médica que una especialización más y más creciente casi hizo caer en olvido. Un factor de interés especial es el hecho de que la Historia de la Medicina empiece a orientarse hacia las ciencias sociales precisamente cuando muchos médicos tienden a una especialización cada vez más exclusiva, en la que no se tiene en cuenta al paciente como ser humano y social. Sin embargo, la prevención de las enfermedades, la restauración de la salud y la rehabilitación física y mental de los pacientes, son tareas de naturaleza social tanto como de naturaleza médica. El estudio de esos problemas en relación con los conceptos médicos, religiosos e incluso políticos del pasado, ayudará a los médicos de hoy a clarificar sus actitudes y responsabilidades. En el campo de la Psiquiatría, la investigación de los cambios en la relación entre médico y paciente, aumentará la comprensión del médico moderno y agudizará la conciencia que éste tenga de su posición dentro de nuestra sociedad. Otro aspecto del estudio de la Historia de la Medicina es su considerable valor para aquellos médicos que piensan dedicarse a la profesión en los países que se hallan fuera de la esfera de la civilización occidental: un conocimiento y sentimiento del pasado les capacitará mejor en la tarea de llevar a pueblos menos privilegiados los beneficios del progreso científico occidental.

En cuanto al problema de cómo adaptar la enseñanza de la Historia de la Medicina a los programas de las escuelas, es evidente que cada una tiene que resolverlo a su modo. Un estudio de setenta y nueve Escuelas de Medicina de los Estados Unidos, y siete de Canadá, hecho en 1951, revela que de estas instituciones, treinta y siete norteamericanas y las siete canadienses están actualmente enseñando Historia de la Medicina, bien sea a través de Departamentos especiales o bien mediante cursos dictados por miembros de otros Departamentos. (Para más detalles estadísticos, véase: "American Association of the History of Medicine: II. Survey of the Teaching of the History of Medicine in American and Canadian Medical Schools," en el *Bulletin of the History of Medicine*, 26:6, 1952, pp. 562-578).

Seperatas de este artículo, en español, podran obtenerse si son solicitades por un minimum de 25 lectores.

Survey of Teaching Radiology in the United States, Puerto Rico and Canada

ISADORE MESCHAN, HOWARD J. BARNHARD AND ELVIS LITTLE

UNDER THE AUSPICES of the American College of Radiology a survey of the teaching of radiology to medical students in the United States, Puerto Rico and Canada was conducted during the last quarter of 1954. The questionnaire was compiled by a subcommittee on the Commission on Education. Eighty-five questionnaires were sent out and of this number, 60 were tabulated. Four questionnaires were received after tabulation but it was not considered that their inclusion would induce any marked variation. A statistically significant response was therefore achieved.

The major topics considered by the questionnaire were:

1. The organizational status of teaching radiology departments.
2. An analysis of factors concerning teaching of radiology themselves.
3. A study and survey of curricula being employed.
4. An analysis of methods of teaching and suggestions in relation to their improvement.

Organizational status of departments

It is recognized that the various component parts of a radiology department may include:

a. Diagnostic Roentgenology.
b. Radiotherapy.
c. Radioisotope therapy.
d. Radioisotope tracer studies.
e. Biophysics.

Table 1 summarizes the results in relation to these matters. It is noteworthy that approximately 90 per cent of the radiology departments have achieved separate departmental status in medical schools; but only 16 per cent have separate departments of diagnosis and therapy. This is in keeping with the recommendation of the American College of Radiology at this time. Although 66 per cent of the medical schools had divisions or departments of biophysics, relatively few of these were operating as a subdivision of radiology alone.

It is also noteworthy that although 60 per cent of radiology departments include radioisotope therapy in their organization, only 48 per cent include tracer studies other than iodine.

Factors concerning teachers

Of 59 schools analyzed, the directors of 44 were participating in outside consultantships in radiology. Ten were strictly full-time, and five were on geographic full-time status but had significant responsibilities outside the department of radiology. It is thus apparent that very few directors of teaching departments have been able to adopt their teaching endeavor on a full-time status.

It is of interest that most of the teachers (73 per cent) felt the need for instruction in teaching techniques and even more (83 per cent) indi-

At the time this article was prepared Dr. Meschan, Dr. Barnhard and Dr. Little were associated with the department of radiology at the University of Arkansas Medical Center. Dr. Meschan now occupies the post of head of the department of radiology at the Bowman-Gray School of Medicine of Wake Forest College. Reprints of this article will be available from the University of Arkansas.

TABLE I

ORGANIZATIONAL STATUS OF RADIOLOGY DEPARTMENT

	No.	%
Separate departmental status	54/60	90
Separate departments of diagnosis and therapy	9/58	16
Radioisotope therapy included in Radiology	35/58	60
Iodine tracer studies included in Radiology	28/58	48
Tracer studies other than iodine included in Radiology	20/56	36
Full time physicist(s) employed	29/58	50
Medical Schools with divisions or departments of Biophysics	39/59	66
Separate departments of Biophysics	11/59	19
Biophysics as a subdivision of Radiology alone	9/59	15
Biophysics as a subdivision of Radiology and another department	2/59	3

cated that they would enroll in teaching courses if such were offered.

Analysis of radiology curriculum

It was found that an analysis of the curriculum revealed complex findings very difficult to summarize. Few institutions were sufficiently similar to even categorize in relatively broad groups. We have proposed tables showing the distribution by hours per week spent in radiology teaching in each medical school year (Table 2) and the radiology teaching hours per year in organized courses offered by radiology teaching faculty (Table 3).

The following can be summarized from this table and other auxiliary data:

At least 95 per cent of the medical schools include normal and abnormal diagnostic roentgenology and radiotherapy in their curriculum; 77 per cent include radiation protection; 72 per cent include radioisotope teaching; and 55 per cent include biophysics.

Surprisingly little time is given to normal diagnostic roentgenology in that approximately 59 per cent of the schools devote less than 10 didactic hours in this endeavor.

One fourth of the schools devote less than 10 didactic hours in the teaching of abnormal diagnostic roentgenology and three-quarters of the schools include less than 10 didactic hours in the teaching of radiotherapy.

Only 16 per cent of the schools teach over 100 hours per year in their own radiology course and only 10 per cent spend over 100 hours in teaching clinical correlation courses.

Most of the radiology teaching is apparently at the intern and resident level or in post-graduate groups, (42 per cent). The median in teaching hours per year was:

Radiology course, 40 to 49 hours.

Other clinical courses, 10 to 19 hours.

Clinical correlation courses, 10 to 19 hours.

Teaching interns and residents, 50 to 59 hours.

The medical school as a whole, over 100 hours.

Practically no radiologist teaches in dental school, nursing school and veterinary school. No accurate tabulation was made in relation to any other ancillary schools.

When these teachers were asked

TABLE II

DISTRIBUTION BY HOURS PER WEEK SPENT IN RADIOLOGY TEACHING IN EACH MEDICAL SCHOOL YEAR

by Radiology Teaching Faculty—Both Elective and Compulsory Courses

Year of Medical School	No. of Students in Class		Total Hours Per Week of		Conference Hours Week		Lecture Hours Week		Laboratory Hours Week		Weeks of Course		Radiology Not Taught	Total Hours Per School Year (in all courses)	
	Range	Median	Range	Median	Range	Median	Range	Median	Range	Median	Range	Median		Range	Median
1st year	1-100+	71-80	1-70	1-10	0-70	0	0-20	1-10	0-20	0	1-40	1-10	20	1-79	10-19
No. of Replies Analyzed →	32		29		29		29		29		22			51	
2nd year	1-100+	71-80	1-70	1-10	0-70	0	0-70	1-10	0-10	0	1-50	11-20	21	1-79	10-19
No. of Replies Analyzed →	31		31		31		31		30		24			52	
3rd year	11-100+	61-70	1-80	11-20	0-40	1-10	0-60	1-10	0-30	0	1-50	11-20	4	1-179	20-29
No. of Replies Analyzed →	45		46		45		45		45		35			51	
4th year	1-100+	61-70	0-100+	11-20	0-80	1-10	0-50	0	0-40	0	1-60	11-20	3	1-349	30-39
No. of Replies Analyzed →	43		49		45		43		43		38			49	

TABLE III

RADIOLOGY TEACHING HOURS PER YEAR IN ORGANIZED COURSES OFFERED BY RADIOLOGY TEACHING FACULTY (Elective Courses Included)

	Years			
	I	II	III	IV
New England				
1	31	20	22	52
2	0	0	33	99
3	x	x	x	x
Middle Atlantic				
1	45	14	12	0
2	8	60	16	72
3	73	72	24	20
4	N. S.	9	14	10
5	12	0	40	40
6	4	4	44	36
7	0	12	0	22
8	22	1	68	320
9	0	12	6	38
10	1	10	30	12
11	12	12	0	90
12	40	40	160	240
13	x	x	x	x
South				
1	12	12	114	44
2	12	0	20	140
3	8	22	0	22
4	4	20	10	162
5	2	2	118	9
6	3	0	20	40
7	18	0	16	32
8	0	0	33	120
9	10	8	60	258
10	0	4	105	0
11	0	0	8	N. S.
12	0	36	6	24
13	0	25	6	21
Southwest				
1	0	4	24	264
2	0	48	22	8
3	20	0	20	8
4	9	0	79	12
5	0	0	30	30
6	0	0	36	48

	Years			
	I	II	III	IV
Middle West				
1	8	0	26	N. S.
2	6	16	27	27
3	36	48	24	24
4	N. S.	N. S.	N. S.	N. S.
5	x	x	x	x
6	0	0	12	80
7	32	21	48	24
8	x	x	x	x
9	x	x	x	x
10	0	1	32	32
North Central				
1	0	0	10	50
2	6	12	24	31
Mountain				
1	16	0	27	27
2	0	0	36	16
Pacific				
1	20	8	23	35
2	15	21	72	105
3	0	11	11	110
4	6	10	24	2
Outside United States				
1	0	0	24	24
2	0	48	60	39
3	0	0	32	64
4	0	0	0	13
5	x	x	x	x
6	20	0	N. S.	N. S.
7	x	x	x	x

0—Not Taught
x—Not Answered
N. S.—Not Specified

to comment regarding the factors which were preventing teaching progress it was indicated in about half of the cases that the curriculum committee policy was at fault; close behind were lack of space and lack of funds.

An analysis of methods of teaching

In general, the teaching techniques most highly regarded were small group conferences and demonstrations. In many instances it was

deemed necessary to provide these with lantern slides.

Other teaching techniques such as teaching file projects, lectures and evaluation of the literature were less highly regarded.

Despite this aversion to lectures, only five of the 59 schools did not employ them. Their lecture aims were usually along the lines of preparation of the student for growth in the subject of radiology and to train the student to think in radiologic terms. Very few of the teachers attempted to present any unpublished material or facts required by other specialties. In most instances lectures were informal, permitting questions during the lecture hour and case presentation and demonstrations. Less than one-half required textbooks and only 11 of the 60 schools make specific reading assignments.

This lack of utilization of specific reading assignments and textbooks is perhaps related to the need for more teaching texts or manuals since over one-half replied that such were needed. The survey also indicated a definite need for teaching collections of radiologic material for student use; and at least half of the group indicated that they would utilize these materials extensively if they become available.

About 67 per cent of the schools replying give some form of clerkship in radiology in the third or fourth years with the fourth year predominating. Most of the time spent in clerkships is devoted to observation of film interpretation. Relatively little time is devoted to fluoroscopy observation.

A normal diagnostic roentgenologic laboratory medium for teaching was employed by 13 out of 55 schools and an abnormal diagnostic roentgenology laboratory was employed by 20 of the 55. Of the thirteen replying in the first instance, nine devoted less than 10 hours to these laboratory sessions. Of the 20 replying in the second instance, 16 devoted less than 30 hours to such laboratory sessions: 10 per cent however, devoted as much as 80 to 90 hours in such laboratory teaching. A laboratory course was defined as consisting of museum methods or multiple teaching files as a teaching expedient.

Methods of improvement of teaching

In general it was thought that the most improvement could be derived from:

1. More basic science correlation in the third and fourth years of medical school.

2. More emphasis on generalities and training students to read on their own for details.

3. More instructors so that teaching might be done in smaller groups.

Wherever laboratory courses could be employed, such were recommended with the aims of teaching the student the value of radiologic procedures, their scope and limitations, and to emphasize the clinically applicable information.

In general it was thought that the main reason for limitation of correlation of basic sciences with the third and fourth years of medical school was due to the time required to make such complex interdepartmental arrangements and the limited staff available in the radiology department. Very often the service function of the radiology department is so great that time available for such interdepartment conferences is minimal.

General conclusions

The following generalities may be made as obtainable from the survey and deserve separate mention:

1. Radiology has virtually achieved separate departmental status in most medical schools and has aligned itself closely with radioisotopic studies.

2. It is considered desirable that the teaching of radiology be integrated with the basic sciences. This has been accomplished by:

   a. Separate courses

   b. Integration with existing courses

3. There is a trend toward the utilization of small group conferences and demonstrations with emphasis on visual aids.

4. Most teachers of radiology feel that the teaching should prepare the student for growth in the subject matter later, and without emphasis on detail at the time.

5. There are virtually as many patterns in the teaching of radiology as there are medical schools. Each teacher has attempted to set up his program in accordance with the individual needs and requirements within his school, though frequently limited by lack of cooperation, space and funds.

Estudio estadistico sobre la enseñanza de Radiologia a los estudiantes de Medicina en los Estados Unidos, Puerto Rico y el Canada

El Subcomité de la *Commission on Education* del Gobierno norteamericano ha hecho un estudio (1954) sobre la enseñanza de la Radiología en las Escuelas de Medicina de los Estados Unidos, Puerto Rico y Canadá. Dicho Subcomité (al cual perteneció Isadore Menschen, M.D., uno de los autores del presente artículo) hizo circular 85 ejemplares de un cuestionario, y de éstos, 60 fueron tabulados, con lo cual se logró un resultado satisfactorio desde el punto de vista estadístico. Las preguntas se referían principalmente a las materias siguientes: (1) la organización de los respectivos Departamentos de Radiología; (2) factores personales relativos al personal de enseñanza; (3) los programas de estudio; (4) los métodos de enseñanza, pidiéndose, al mismo tiempo, sugerencias sobre el mejoramiento de ésta. Se llegó a las conclusiones siguientes: (1)La Radiología goza virtualmente de un *status* de independencia en la mayoría de las Escuelas de Medicina y funciona en relación estrecha con los estudios de Radio-Isotopía. (2) Se considera deseable integrar la enseñanza de la Radiología con los estudios de las ciencias básicas, tarea que puede llevarse a cabo mediante cursos nuevos, o por la integración con cursos ya existentes. (3) Se registra la tendencia hacia la formación de pequeños grupos de estudio y discusión, poniendo énfasis en el empleo de proyecciones *(visual aids)*. (4) La mayoría de los profesores opinan que la enseñanza de la Radiología debe tener tan solo el propósito de ofrecer a los estudiantes base para una especialización futura. (5) Los métodos y programas de enseñanza varían mucho según las diferentes Escuelas, ya que cada profesor tiende a establecer su programa de acuerdo con las necesidades individuales y las exigencias de su Escuela, aunque frecuentemente se ve limitado por falta de cooperación, de espacio y de fondos.

Seperatas de este artículo, en español, podran obtenerse si son solicitades por un minimum de 25 lectores.

Medical Education in a University Setting

ARNOLD B. GROBMAN

AFTER the war the University of Florida, along with most institutions of higher learning, experienced tremendous growth. In some ways this growth was different from that on other campuses because it continued during the subsequent years with virtually no retrenchment. In 1945, the University of Florida was a school with 3,500 students. It now has 10,000 students. It is the largest university in the South and 18th in the nation. One of the chief reasons for its growth has been the phenomenal increase in the population of the state of Florida. The U. S. Bureau of the Census predicts a population of 5,000,000 in the state by 1965. Florida will have moved from 20th place in population in 1950 to 10th in 1965. Using even more conservative figures, it is estimated that by 1970 the state of Florida will have about 110,000 students enrolled in its colleges. Between 1930 and 1950 Florida's student population increased 561 per cent.

The late Dr. J. Hillis Miller, recently president of the university, saw the signs of this remarkable growth and concerned himself, among other things, with developing the university for its fullest service to the state. He early recognized the need for medical education to be given within the state since there was at that time no institution in Florida providing such training. Other states, with smaller populations, had within their borders one or more medical schools. The need was not only for more physicians to practice throughout Florida but also there was a strong need for a school where Florida citizens could study medicine. In 1950-1951, the per capita admissions of Florida residents to medical schools was 46th among the 48 states.

The state legislature, with a surprising and happy appreciation of the value of expert and disinterested opinion, appointed a committee of medical educators from outside the state and invited this committee to recommend to it the best location for a state medical school. The Lippard Committee eventually recommended that the school be located in Gainesville on the campus of the University of Florida.

President Miller then approached the Commonwealth Fund, pointing out that there was a unique opportunity to develop a new medical school on the established campus of a large state university. The Commonwealth Fund responded generously and gave the university a grant of $96,500 for the purpose of studying not only the educational problems

Dr. Grobman is presently the Director of the Florida State Museum. He was formerly the pre-professional adviser in the College of Arts and Sciences of the University of Florida. He participated in the Commonwealth Fund Study, which was part of the planning for the new J. Hillis Miller Health Center; this article is adapted from his report.

but also the ways in which such a medical school could best serve the needs of the state.

Results of the study

The material below is a summary of one phase of the report prepared under terms of this grant. The full report is being published by the University of Florida Press in five volumes under the title, "Planning Florida's Health Leadership." The director of the Medical Center Study was Dr. Russell S. Poor, now provost of the University of Florida Health Center, to whom the writer is deeply indebted for the privilege of participating in the study.

The historical trend in America, has been for medical education to be given first by individuals; then by medical societies; next by autonomous schools; and now, primarily, by schools associated with universities. The present university association, however, is in most instances little more than nominal. Many contemporary medical educators now agree that the time is here for medical schools to be made integral parts of universities rather than to continue as semi-autonomous units only loosely associated with universities. Even now, many medical schools are moving, and in some cases returning, some teaching activities from large cities back to the main university campus, as for example, from San Francisco to Palo Alto and from Indianapolis to Bloomington.

Another historical transect would trace the real knowledge available for medical education. During the 19th century, there was a tremendous advance in knowledge about the natural history of disease. The increase in effectiveness of cellular studies and the emergence of a science of bacteriology helped provide a sound biological basis for medical practice. These merely preceded a host of other scientific impacts upon the teaching and practice of medicine. The net result has been considerable progress in the prevention of disease and the sympathetic care of the sick. It has also had an unfortunate effect in developing a concept of man as an isolated biological unit.

Thus it would appear unwise to plan a medical school today that is not intimately associated with the humanitarian aspects of the university as well as with its scientific areas. A real functional integration of the medical school with the rest of the university is clearly indicated.

Liberalizing medical training

It became apparent to us that within the four-year framework of present-day medical education, the technical aspects of medicine were being well taught. It was our impression that while, perhaps, some improvement could be made in presenting medicine to college graduates, this improvement would be minor as compared to how medical training could be liberalized.

Many medical educators are concerned over the rather sharp cleavage between the basic sciences of the first two years and the clinical studies of the last two years. It impresses me, however, that an even graver problem is the cleavage between liberal arts education on the one hand and medical education on the other. Many students apparently regard liberal arts education as a hurdle over which they must jump before they can get into the important phase of their training: medical school. Many regard liberal arts education as a stop-gap until they can get down to the important business of going to medical school. Because of

attitudes such as these, and because of the intense fixation on training and technical skills after the liberal education, the impact of the liberal arts education becomes much reduced.

While it is true that many practicing physicians contribute quite effectively to their communities beyond the practice of medicine, it is certainly not clear that all of them are contributing to the full extent of their capabilities. The problem seems to be to make the liberal arts education far more meaningful to the developing student. Even more important is the question of what carry-over there may be during his later professional life. Many physicians, particularly in small communities, occupy positions of prestige quite unrelated to their actual accomplishments outside of medicine.

The need is to make more effective those aspects of the liberal arts training which help a man become a better citizen of his community and a more interesting companion for himself. One way in which this might be accomplished would be to introduce some of the liberal arts courses during a period when the student has greater maturity. This would indicate offering these courses, perhaps, during the years when he would normally be in medical school, and this would imply, of course, some alteration in the medical school program, which is already too full. The alteration could either be by reduction in the number of medical school courses or by shifting them to an earlier part of the student's collegiate training. Reducing the number of courses would adversely affect the splendid technical training students are now receiving, and I would not propose that this be done. The other alternative, then, is to move some medical school courses down into earlier years, in compensation for the moving of some liberal arts courses into later years. President Gilbert White of Haverford College, at the Second Buck Hill Falls Conference, said that he believed college sophomores could easily handle medical school courses. We propose a somewhat less drastic shuffling of courses than implied by President White.

Revising the curriculum

Our deliberations about these problems have led us to revise the curriculum. There is need for reducing the number of years a student spends in obtaining a medical education. Four years of liberal arts college, plus four years of medical school, plus internships and residencies constitute a large proportion of a man's years. Notwithstanding, I am going to present a curriculum that is of the same duration as the typical program now followed by medical students so that the comparison has temporal control. The normal pattern is four years of liberal arts work and four years of medical school studies, providing an eight-year sequence. Of the men graduating from medical school in June 1957, about 90 per cent will have a bachelor's degree. Within this eight-year sequence, then, the course of study may be rearranged to provide a curriculum, the main goal of which is to increase the effectiveness of the liberal arts program without in any way decreasing the effectiveness of the present excellent medical school training.

The traditional eight-year sequence, using the University of Florida as an example, would include two years in our lower division, during which time students complete a series of six comprehensive courses that

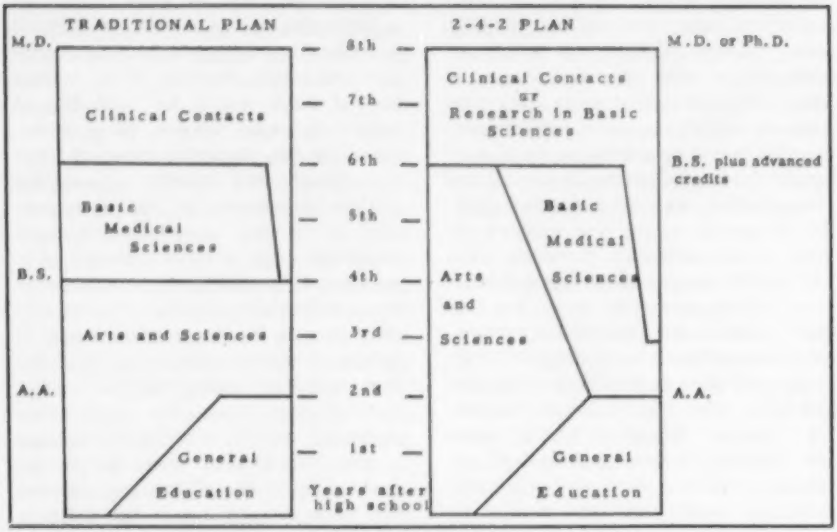
sample the various areas of human knowledge; during the junior year students enter the upper division (our College of Arts and Sciences), and, there, take the remainder of their preprofessional work. We offer students either a conventional departmental major or a concentration program that cuts across departmental lines, which we call a group major. In the group major, the student selects a concentration program consisting of courses from three related teaching departments. After the student satisfactorily completes his preprofessional work, including a foreign language, the concentration program, electives, etc., he receives a bachelor's degree. Then he would enter the medical school and spend approximately two years with the basic sciences. During the second year he might be introduced to some clinical experience, and he would devote his third and fourth years (seventh and eighth years of the collegiate sequence) to clinical experience.

The program we are suggesting here obliterates the break at the bachelor's degree and, if it must be divided at all, it would be divided into three blocks: the first of two years for general education; the second of four years for concurrent courses from the liberal arts and basic sciences; and the last of two years for clinical experience. The first two years would be the same as those in the traditional program. During the next four-year sequence, namely the third through the sixth years of the total eight-year sequence, the liberal arts courses would be offered throughout with perhaps a declining amount of time devoted to them from the third to the sixth year. Medical school courses, for example human anatomy, could begin in the third year, and the number of such courses would increase from the third to the sixth year. In this curriculum, then, we would have not a horizontal program, nor a vertical program, but rather a kind of diagonal program. During this middle period there would be both liberal arts and basic science courses demanding the student's attention. For one thing, this would extend the period of motivation for a student with a strong orientation toward medicine over a longer period. For another, it would let him experience some extremely sensitive liberal arts courses at a far more mature age. It would obliterate the sharp cleavage that normally comes at the bachelor's degree. Upon the completion of the six years, a student would have a fine background upon which he could go into the clinics and receive the M.D. degree, or, if his interest in clinical medicine was less than his interest in the subject matter of one of the fields, he could spend the last two years on a research problem and earn his Ph.D. This might provide an excellent method of recruiting medical school faculty from among persons with an original inclination towards the practice of medicine. The last two years would be largely clinical experiences as they are traditionally offered. These could actually be started perhaps as early as the fourth year on an abbreviated scale. Figure I compares these two curricula graphically. (See next page).

Two major adjustments

A program such as this, to be effectively carried out, would require at least two adjustments to our present methods. There would have to be considerable adjustment on the part of some professors in the liberal arts colleges who would find themselves, in their courses in Shakespeare, or

FIGURE 1



criminology, or comparative religion, or international relations, having in their classes, besides their usual students, a few highly selected, mature, and, we hope, inquisitive young men who would be at the level of first or second year graduate students. For these young men to be stimulated, considerable revision of the level at which some of these liberal arts courses are offered would have to be made.

The other adjustment would have to be in effecting a more sensitive counseling scheme than is presently in operation. It would seem desirable to let men enter the 2-4-2 plan along a sliding scale of acceptance. For example, at the end of the first year of college an outstanding student could be told that a place was being reserved for him in the 2-4-2 plan, and he would then need have no more concern about selecting courses with a view towards satisfying medical school admissions committees. Men obviously lacking the necessary ability would be quite firmly told that there would not be a place for them in the 2-4-2 program and they could then, with no loss of time at all, devote their energies to some other pursuit. A fair sized group might be placed in an intermediate category, and told that they were neither accepted nor rejected, but could reapply at the end of their sophomore year. This same selective process could then be used at the end of the second year, admitting some into the program, closing the door to others, and letting a few more wait until the third year to see whether increasing maturity might not help them adjust to the rigors of a medical program. They would be admitted tentatively to the program and would then, among other things, take one or two medical courses which, if they did not go on, would be lost. But of course they would not be sacrificing a whole year, but merely a few credit hours in human anatomy. At the end of the third year, all students applying

should be either accepted or rejected.

Students transferring to the University of Florida during the first or second year of college could enter this program on the same basis as Florida students. Transfers coming with a bachelor's degree, however, could only transfer into the traditional program.

It would seem most desirable to operate both the 2-4-2 plan and the traditional plan on the campus at the same time. Perhaps a division of the student body which permitted some to go into the 2-4-2 program and others into the traditional line of study, would give us some information, in succeeding years, as to whether the plan was serving as effectively as we hope it will. A sample curriculum of the first six years under the 2-4-2 program is shown in Figure II. In this chart, the "L" indicates courses taught by the lower division faculty; the "U," the upper division; and the "M," the medical college. The numbers following the letters are the credit-hour assignments.

THE FIRST SIX YEARS OF A SAMPLE 2-4-2 PROGRAM FOR A MEDICAL STUDENT WITH INTERESTS IN THE SOCIAL SCIENCES

***FIRST YEAR:* 36 credits**
American Institutions, L-8
Freshman English, L-8
Biological Science, L-6
Biology Laboratory, U-4
General Chemistry, U-8
Military Science, U-2

***SECOND YEAR:* 36 credits**
Fundamental Math, L-6
The Humanities, L-8
Comparative Anatomy, U-4
Qualitative Analysis, U-4
Organic Chemistry, U-4
General Physics, U-8
Military Science, U-2

***THIRD YEAR:* 35 credits**
Organic Chemistry, U-4
French, U-6
Amer. Federal Gov't, U-3
Social. Found. Modern Life, U-3
Gross Anatomy, M-12
Biochemistry, M-5
Other medical courses, M-2

***FOURTH YEAR:* 36 credits**
History of World Civilizations, U-6
Amer. State & Local Gov't, U-3
2nd year French, U-6
Biochemistry, M-5
Histology & Embryology, M-8
Physiology, M-8

***FIFTH YEAR:* 36 credits**
International Relations, U-6
Marriage & the Family, U-3
U. S. History to 1865, U- 3
Bacteriology, M-8
Pathology, M-12
Other medical courses, M-4

***SIXTH YEAR:* 38 credits**
U. S. History 1865 to Present, U-3
Latin-American History, U-3
Comparative Governments, U-3
Child in Amer. Society, U-3
General Anthropology, U-3
Pharmacology, M-8
Physical Diagnosis, M-5
Other medical courses, M-10

Use of the plan

A question now remains: what is the University of Florida going to do with this plan? This proposal was submitted as a research study under the Commonwealth Fund Study program. Recently, the Commonwealth Fund gave the university another grant in the amount of $143,650. About half of these monies will be available for curricular and program experimentation. I anticipate that some elements from the 2-4-2 plan will be considered, along with other programs, for some of the proposed experimentation in medical education at the university.

La Educación Médica y la Universidad

Un problema nacional de los Estados Unidos que amenaza agravarse, es la escasez de médicos (según el estudio del Dr. Howard Russel,

publicado en el *New York Times*, 20 febr. 1955, el número de médicos, que era, en 1950, de 137 por 100,000 personas, bajará, en 1960, a 133). En el Estado de Florida se han hecho ciertos esfuerzos por resolver este problema en el plano regional.

Aunque la Universidad de dicho Estado es hoy día la mayor de las Universidades del Sur (el número de estudiantes aumentó de 3500 en 1945 a 10,000 en 1955), no tiene Escuela de Medicina, ni tampoco la tienen las instituciones académicas privadas de Florida. La Legislatura del Estado empezó a ocuparse del problema, agravado aun por el tremendo crecimiento de la población de Florida en los últimos años. Al mismo tiempo el *Commonwealth Fund*, de Florida, otorgó a la Universidad la suma de 96,500 dólares para estudiar no solamente los problemas educacionales relativos a la fundación y funcionamiento de una Escuela de Medicina, sino también los modos en que ésta pudiese mejor servir a las necesidades del Estato de Florida. La mayor parte de este artículo es un resumen del voluminoso informe, preparado con la ayuda financiera del mencionado Fondo, por un Comité especial de la Universidad de Florida (el *Medical Center Study*, en el cual el autor participó), bajo la dirección del Dr. Russel S. Poor. El texto completo, que comprende cinco volúmenes, fué publicado por las Prensas de la Universidad de Florida, bajo el título "Planning Florida's Health Leadership." Este resumen, yendo más allá de los problemas puramente regionales, ofrece una serie de datos interesantes relativos a la historia de los estudios de Medicina en los Estados Unidos.

Seperatas de este artículo, en español, podran obtenerse si son solicitades por un minimum de 25 lectores.

The Figure Drawing Test as an Adjunct in the Selection of Medical Students

HANNA FATERSON

IT IS A TRUISM that the medical school curriculum presents a situation of severe stress for many students. Embarking on the initial stages of professional lifework, with its implications of responsibility for life-and-death problems; facing a demanding work schedule which leaves little time for recreation and relaxation; the feeling, often expressed by students, of being overwhelmed by the sheer amount of facts that must be learned; all of these are understandably anxiety-provoking, and seriously test the stability and adjustive capacities of the students. All of us have known students who were not able to withstand this regime; who failed in their work in spite of good intellectual equipment and good preparation; who withdrew from medical school because they began to doubt their personal fitness for the study and practice of medicine; who suffered breakdowns of a more or less severe, more or less transient or permanent nature; who, perhaps, might have got along without mishap had they chosen a less demanding profession.

It is in the context of the above considerations that the procedure to be described was instituted six years ago at the State University of New York College of Medicine at New York City (formerly the Long Island College of Medicine). It was felt by the administration that some procedure should be introduced which would help the admissions committee to evaluate some of the "intangible" personality factors concerning which the usual admissions criteria—such as college grades and recommendations, aptitude test scores, letters of recommendation and the customary personal interview—provided insufficient information.

It was early decided that whatever additional procedure was to be introduced would be applied only to those several hundred applicants who, on the basis of their paper credentials, were judged sufficiently promising to be invited for a personal interview. The personnel available for carrying out the additional procedure consisted of one clinical psychologist able to devote about one day a week to this work during the period of active committee deliberations and one psychiatrist able to devote one half-day a week during the same period. Thus any method decided upon would have to involve a minimum of staff time.

Technique followed

Originally, the preference of the administration was for a standard, printed, quick-scoring, self-administering paper-and-pencil personality test that would yield a quantitative score. Such a test was tried, but was

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quickly abandoned, since it yielded "perfect" scores with almost unfailing regularity. It was obvious that bright, test-wise college students, most of whom came from the metropolitan area, could easily "see through" the questions included in the average test of this type. They could be counted on to give the "right answers," without revealing whatever problems of adjustment they might have. The need was obviously for a technique that such a high level population could not "see through."

Our final choice of technique, which combined economy of administration with relative imperviousness to the sophistication of the group, was the Machover Figure Drawing Test.* In this test the applicant is simply asked to draw, free hand, a person and, when he has finished, to draw a second person, this time of the opposite sex from the one drawn first. In our adaptation of the procedure the test is made self-administering by means of simple printed instructions and the administration of it is handled by the office secretarial staff. The applicant takes the test while waiting for the personal interview, completing it along with other application material obtained on the same occasion. The test is thus easily integrated into the established routine. The psychologist who evaluates the drawing test does not interview nor even see the applicant. Nor is the evaluation of the drawings available, at the time of the interview, to the committee member who interviews the applicant. Thus the interview and the interpretation of the drawing test are deliberately kept separate until all the material for a given applicant is brought together for final review by the committee.

The figure drawing test is an established psychological technique, backed by extensive clinical validation and widely used in the field of clinical psychology. While, like other projective tests, it has most frequently been used in testing psychologically disturbed persons, its usefulness far transcends the diagnosis of psychopathology. Briefly, the rationale for this and other projective techniques is that, given a sufficiently fluid or unstructured task, in which instructions and modes of procedure are deliberately left vague, the manner in which a person carries out the task bears an imprint of his individual personality. The underlying assumption is that a person's reactions to such a free test situation are not a matter of chance, but are determined by, and are an expression of, his characteristic and individual needs, personality trends, and manner of approach to problems. Out of an infinite number of possibilities—(whether for instance, to make the drawing large or small, full face or profile; how much and what kind of detail to include; the position on the page, the kind of line used, the type of person represented, etc.)—those are "chosen" which are most congenial to the particular individual. To give an oversimplified illustration, it would not be surprising to find a timid, inhibited, insecure person drawing a very small or very faintly sketched figure; or an assertive, goal-directed, effective person drawing a particularly well-organized figure of adequate size, executed in clear, firm line. A psychologist experienced in the use of this technique often can, from the examination of these graphic productions, derive some insights into such questions as the following: How much self-confidence does the applicant possess?

*Machover, Karen. "Personality Projection in the Drawing of the Human Figure." Springfield, Ill. C. Thomas. 1948.

What about his level of drive and energy? Does he use his energy effectively? Is there evidence that he is confused about himself and his goals? Are there indications that he has sufficient resources to stand up under the inevitable stresses of medical school, or would his sensitivities and human insecurities be too heavily taxed? Is there evidence of bizarre thinking, or of deviant personality reactions?

Scoring of the drawings

The drawings, as we use them, do not yield scores or other quantitative measures. Nor is an attempt made to write a personality sketch of each of the several hundred applicants who take the test each year. Rather, each set of drawings is scrutinized (by the psychologist) from the point of view of the one crucial question: Do the drawings suggest any special problem or weakness in those aspects of personality—be they labeled stamina, or "toughness," or adequate psychological defenses, or psychological strength—which are needed for withstanding the stress of the medical school situation.

It should be emphasized that such an evaluation depends entirely on the experience and clinical judgment of the psychologist, both in the general field of personality evaluation, and specifically in the use of this particular technique as applied to this particular population. The interpretation is based on the total impact of the drawings, including both specific features and the manner in which they are integrated. We have not attempted to derive a series of objectively defined scoring points which would yield a numerical index in place of the more global evaluation. Since the meaning of any specific feature of the drawing may have different implications, according to the total context in which it occurs, a scoring system would introduce special difficulties of interpretation.

Each applicant whose drawings, in the judgment of the psychologist, suggest that the stressful medical school situation would be particularly difficult for him to handle, who, in this sense, represents more than the usual risk from the point of view of personal stability, and therefore requires particularly careful personality evaluation, is asked to return for a *second* interview. This second interview is with the psychiatrist who acts as a special consultant to the admissions committee. The psychiatrist makes an estimate of the applicant's maturity, stability, emotional readiness for the study of medicine, and general personality reactions. His report is referred back to the committee, and becomes part of the applicant's total record, available to the committee for final review.

However, it should be pointed out that the drawing test is not solely a device for screening potential instability. It often serves a more positive purpose. Whether or not the applicant is referred for psychiatric evaluation, the psychologist, who has examined all of the drawings, is frequently in a position to present for the committee's consideration certain impressions concerning the applicant's personality characteristics. Thus, an applicant who is shy and unspectacular in the usual personal interview and is not able to "put his best foot forward," may reveal his positive qualities more fully in his manner of drawing. For example he may, in the drawings, convey the impression of being an unusually well organized person; or of being a sensitive person, a quality of particular interest in evaluating his potential

as a future physician; or he may convey an impression of "personal substance" of a higher level than his record otherwise indicates.

Questions about the tests

Two questions are frequently raised by admissions committee members who encounter this test for the first time. The first question concerns the possible influence of drawing skill on test interpretation. The experience of the many psychologists who use this test for diagnostic purposes has been that people *do* communicate something of themselves in these graphic productions, irrespective of drawing skill. In our experience, the drawings of applicants referred for psychiatric evaluation show a wide range of drawing skill, from the naive and primitive to the most sophisticated and accomplished. Poor draftsmanship is not necessarily associated with serious adjustment problems, while highly artistic productions may reveal such problems in spite of the drawing skill.

Another question likely to be raised when a committee member sees a drawing which the psychologist has characterized as grossly deviant is whether the applicant wasn't just "joking". Comments overheard while applicants take the test, and comments sometimes made by applicants to the interviewer or office staff concerning the test, suggest that the majority work at this task as assiduously as they do on the rest of the application procedure, whatever their private feelings about the test. Some applicants *do* interpret the situation humorously. If the applicant, in the stressful interview situation, can maintain his sense of humor, and can achieve a humorous or caricature production, may it not be that he demonstrates his ability to use humor as a positive resource, which may stand him in good stead in other difficult situations? More pertinent is the observations that even if the applicant interprets the task as a joke, he is still likely to handle the drawings in a manner which is characteristic of him. Thus even under these conditions, he tells us something about himself, be it only whether or not the intended humor "comes off" successfully. Continued use of this test would suggest that possible interpretation of the task as a joke has not seriously affected the usefulness of the test.

Summary

In summary, it is necessary to emphasize that no applicant is ever denied admission because of the findings on the drawing test alone. Rather, the test is used as a screening procedure for further psychiatric exploration, where indicated. Moreover used as a projective technique, drawings have a place in the comprehensive evaluation of the individual applicant. They serve as an additional source of information about, and lead to a more searching exploration of, some of the important relevant "intangibles" which are involved in the difficult task of selecting medical students.

El "Machover Test", o dibujo de figura humana como ayuda en la selección de estudiantes de Medicina

Como el *curriculum* de las Escuelas de Medicina impone a los estudiantes un esfuerzo extraordinario, se han visto casos en que algunos estudiantes, bien equipados intelectualmente, no pudiendo cumplir con sus trabajos, empezaron a dudar de su capacidad y, a consecuencia de trastornos personales, tuvieron que abandonar la carrera. Los factores que usualmente determinan la admisión a las Escuelas de Medicina resultan, por lo general, insuficientes para evaluar ese elemento "intangible"

de la personalidad cuyo conocimiento es indispensable para evitar tan penosos fracasos. La Escuela de Medicina de la Universidad de Nueva York (antes llamada Long Island College of Medicine) esta haciendo uso, para la selección de candidatos, del llamado "Machover Figure Drawing Test" (véase Karen Machover, *Personality Projection in the Drawing of the Human Figure*, Springfield, Ill., 1948): se pide al candidato para la admisión, mientras está esperando una entrevista y llena los formularios usuales, que dibuje una figura humana, y luego otra, de sexo opuesto. Esta prueba—en que una persona se enfrenta con una tarea no bien definidad e instrucciones deliberadamente vagas—se usa corrientemente en el campo de la Psicología clínica, y se ha establecido que es propia para revelar ciertos rasgos de personalidad que quedarían ocultos en otras pruebas de aptitud. Se supone que las reacciones del candidato, en esa situación, no obedecen al azar, sino que son determinadas por sus características individuales, tendencias personales y modos particulares de abordar los problemas. Por ejemplo, una persona tímida, inhibida e insegura, tenderá a dibujar una figura muy pequeña o débilmente trazada, mientras que una persona enérgica, afirmativa y segura de sí misma, produciría dibujos bien organizados, de tamaño adecuado y ejecutados con líneas claras y firmes. El psicólogo que evalua los dibujos (sin conocer al candidato) no aplica medidas cuantitativas, sino que los escudriña tan solo desde un crucial punto de vista: ¿Sugieren esos dibujos algún problema especial, algún defecto en lo que se refiere a esos aspectos de la personalidad que son necesarios para poder resistir las presiones y tensiones con que el candidato se habrá de enfrentar en el curso de sus estudios? El candidato que, según el juicio del experto psicólogo, presentase un riesgo mayor que el usual desde el punto de vista de su estabilidad personal, es citado a una segunda entrevista, esta vez con el psiquiatra consejero del Comité de Admisiones, el cual hace una evaluación de la madurez, estabilidad y aptitud emocional del candidato. Luego manda su informe al Comité, que lo examina junto con los demás informes y calificaciones del candidato antes de pronunciar la decisión final.

Anticipando posibles dudas sobre la utilidad del "Machover Test", el autor hace constar que el talento y habilidad para dibujar no intervienen para nada en la evaluación del psicólogo; que, además, los dibujos no sirven tan solo para descubrir defectos en la personalidad del candidato, sino que ayudan a menudo a revelar características positivas que quedaron inapercibidas en las entrevistas. También hay que poner énfasis en el hecho de que no se rechaza a ningun candidato basándose únicamente en la evaluación de los dibujos, sino que esta prueba sirve tan solo como adicional fuente de información sobre esos factores "intangibles" pero valiosos en la difícil tarea de seleccionar a los estudiantes de Medicina.

Seperatas de este artículo, en español, podran obtenerse si son solicitades por un minimum de 25 lectores.

Editorials and Comments

Physicians and Engineers

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WITH THE INVASION of medicine by automation, the engineer has become a member of the medical team. The development of electroencephalography, audiometry, electrocardiography, and roentgenology (to name a few obvious fields) would be impossible without engineering talent. Dr. Kessler had to follow engineering principles when he developed the cineplastic arm, and indeed, much of the field of physical medicine and rehabilitation is as dependent on engineering skills as on medical ones. An "artificial kidney," a mechanical heart, an electronic brain are instances of the engineer's mimicry of nature. The respirator, the pulmotor, the iron lung, the automatic blood counter, Dengrove's electrical crib vibrator, the feed-back anesthesia depth control, the electronic stethoscope, and so on—and on—down a list of new medical instruments which represent the offspring of the union of the two professions. Ultra-sonics, radioisotopes, electronic microscopes, hearing aids, contact lenses, shock therapy machines, and mobile prosthetic joints are more examples.

Collaboration between the two professions is in the cards. Aeronautical medicine (maybe, soon, space medicine), weather-proofed clothing, atomic sickness controls, better limb prosthesis, speech and hearing corrective therapies, stress research, studies of electrical brain potentials, are in the van of the medical march, and all of these need engineering assistance.

Although a friendly and reciprocally stimulating cooperation is needed by both, few engineers have any direct contact with physicians and fewer physicians have anything to do with engineers. There are historical as well as temperamental reasons for this lack of contact. An engineer cannot be a lone wolf. Engineering is, *par excellence*, a team-work practice. Doctors have, for centuries, prized the highly individualistic nature of the physician-patient contact. While medical groups are expanding, most medical practice is still pretty much of a solo operation —which, it seems, is the way most physicians want it. So, on this platform alone, the two professions are apart. Then, too, medicine is an old profession and its ways have worn a groove in the community consciousness. It is stabilized, well-established, easily identified. Engineering is a relatively new profession, and the man on the street has little contact with—and less understanding of—engineers. The work of the M.D. can be simply explained: he helps you when you are sick. But the work of the engineer? This roams all over the world—sanitary engineering, mechanical engineering, military engineering, chemical engineering and so on through a dozen ramifications. No simple phrase (like "care for the sick") can delineate the scope of the engineer's mission.

Engineers are justly proud of their work. They can say that of all the professions, they are the only one that consistently pays off on its promises. The poets dream of beauty, the philosophers plan an ideal world, the politicians promise one, the clergyman tries to uplift us, the doctors struggle to postpone death, the lawyers will give what advice they can—but all of them (really, all of *us*) have a high failure ratio. But when an engineer builds a bridge it stays up. Engineering works. So engineers must view the rest of us as idle promisers, working with vagaries, while they work—with brilliant success—with concrete material—both literally and figuratively.

When engineers and doctors work together, they accomplish wonders. The Panama Canal could not have been built without the *joint* efforts of physicians, sanitary engineers and mechanical engineers. Without the combined efforts of the two disciplines, the x-ray would have remained a toy. And so with all these extraordinary tools which engineering has built to help us.

The first group to build a bridge between the two professions will make an enormous contribution to human progress. Why not joint meetings, joint seminars? Why not teach the engineers something more of the human body and human mind? Can we jam a little fundamental engineering into the over-crowded medical school curriculum? To be sure the body is *not* just a machine—or if it is, it is a machine operated by a curious ghost. But there is enough of the machine in the human body to need the help of an engineer. And we, in turn, can open to the new engineer a vision of a challenge, stimulating—to use an old fashioned word—a "thrilling" career which can tax the best skills of both of us.

A National Library of Medicine

On March 13, 1956, Senator Lister Hill and Senator John F. Kennedy introduced in the Senate S3430, "a bill to promote the progress of medicine and to advance the national health and welfare by creating a National Library of Medicine." It was referred to the Committee on Labor and Public Welfare.

The intent of this bill is to transfer the present Armed Forces Medical Library and its budget from the Armed Forces and give it autonomous status under the direction of a board representing the interests of the public and the many departments and agencies concerned with medical research and practice.

This would appear to be an eminently sensible move which should have the support of every physician and medical educator. The Armed Forces Medical Library, which was founded in 1846 as the Library of the Surgeon-General's Office, U.S. Army, has long since transcended the needs of the Army and of the Armed Forces and has become the most complete collection of medical literature in the world, with its 650,000 bound volumes and its 10,000 serial publications currently received.

Besides housing these many books and journals in all languages, the Library contains outstanding collections of historical works, photographs and documents. It publishes a monthly current list of medical literature and the six-volume quinquennial catalog; and through the use of its photoduplication section it fills some 8,000 loan orders every month.

The Hoover Commission's Task Force on Federal Medical Services, dated February 1955 stated: "The needs of a National Library of Medicine are neither in theory nor practice familiar to, or a natural concern of, the Department of Defense. What is needed to enable the library to function properly as a truly national institution is legal status with an administrative organization appropriate to a National Library of Medicine, an effective building and an adequate budget."

The Armed Forces Medical Library has been housed in its present building since 1887. Though originally quite satisfactory this building has long since been outgrown by the collection which it houses. Since 1942 a large segment of the Library has had to be located in rented quarters in Cleveland. For the last 38 years repeated efforts have been made to obtain a new building for the Library in order to relieve serious overcrowding and to provide suitable care for the collection growing at a rate requiring approximately *a half mile of additional linear shelf space each year.* The latest attempt to obtain a new building under present auspices failed when the Department of Defense rejected the plea to include construction funds in the Defense budget for fiscal year 1957, now before Congress.

Looking toward implementation of the recommendations of the Hoover Commission five identical bills were submitted to Congress last summer. All these bills in the Senate were referred to the Committee on Labor and Public Welfare, of which Senator Lister Hill is chairman. Senator Hill and his colleague Senator John F. Kennedy have collaborated in drafting this substitute bill S3430. The Armed Forces Medical Library has through the years assembled a collection which well justifies its being the one chosen to be expanded and redesignated the National Library of Medicine.

The Armed Forces should be commended for the contributions they have made in assembling this matchless collection and they should continue to have the freest access to it. The time has come, however, when the cost of housing, caring for, and maintaining the loan service for such an enormous and rapidly growing medical collection goes well beyond what the Defense Department can justify in its budget. A National Library of Medicine is needed. Widespread support of this bill seems definitely indicated. D.S.F.

Spanish Resumes of Journal Articles

In the effort to make our article section more useful to our Spanish-American readers, the Journal inaugurates with this May issue a plan of providing in Spanish a resume of each of the papers presented.

Plans are under way also whereby Dr. John Z. Bowers, chairman of the Journal's Editorial Board will visit a number of South American medical colleges this coming summer. He will endeavor to learn in what ways the Journal can contribute more effectively to meeting the needs and interests of Spanish-American medical education. He will also hope to make important additions to our list of foreign correspondents.

Additional pages will henceforth be provided in the Journal as found necessary to make possible prompt publication of foreign news letters.

For funds making possible all of these additional services to medical education abroad, the Journal is indebted to the Josiah Macy Jr. Foundation of New York City, whose gift of $10,000 a year for the next three years has just recently been received. D.F.S.

Our Readers Write

Letter from Switzerland

Dear Editor:

It gives me pleasure to accept your invitation to discuss the relationship between medical schools and their universities, since the problems which prompt your interest exist in our country as in yours. One must clarify the reasons for our concern with this issue. Surely the foremost is the fear that our medical schools are fast becoming mere professional schools and no longer fulfill the true purpose of a university. It is rightly feared that faced with an accelerating development of medical science with its resulting need for specialization, the physician, though more powerfully armed with technological knowledge, risks knowing more and more about less and less, to the detriment of his general culture. Such a trend could hardly help but impair the prestige which hitherto has given the medical practitioner a position of esteem among his fellowmen and has helped to create the influence and authority over his patients indispensable for the medical approach to a human personality. This is no reflection on social and preventive medicine, which are often wrongly regarded as the antithesis of medicine as applied to the individual. Actually, they represent only another and equally essential part of medical activity; here, too, in public health, the authority and prestige of the medical corps are important for they facilitate public acceptance and adoption of measures our democracies cannot simply impose by law.

Obviously, to merit this social position, the physician must be both educated and cultured. As Sir Richard Livingstone pointed out in his remarkable address to the First World Conference on Medical Education (London 1953) . . . the purpose of education is not merely to prepare us by a professional training in a specific field to earn our bread—this much is undoubtedly amply provided by the medical schools today: "It should give us some understanding of the universe and of men; and it should help us to become fully developed human beings." Among the objects of a good education mentioned by Livingstone are the ability to express oneself intelligently to others; training in clear and logical thinking and the ability to recognize when something has been proved; the acquisition of standards of value and judgment applicable to all human spheres and activities, and the power to discern what is truly "first rate" or of highest quality. It is perhaps a certain fear that present day medical training programs do not achieve these objects that prompts many educators to desire closer contact between the medical school and the university.

However, we must also consider whether the real problem of culture in the development of the personality of the prospective doctor concerns solely the university stage of his training. A man does not become educated merely by being subjected to a well-planned curriculum of university studies. Far more important is the existence of an inner imperious drive to cultivate himself. This desire cannot be created at a medical school; the student who does not already experience it will soon find himself completely immersed in his program and little inclined to sacri-

fice valuable time in matters which seem to him remote from his immediate field. One of the roles of the preuniversity training is therefore to stimulate in the younger student an interest in culture, general ideas and appreciation of what is beautiful and of the highest quality. Once this inner need has been created, some students will always find ways and means of satisfying it in spite of all obstacles; in others it may prove to be less strong and require more planned opportunity to develop. These seem to me the crucial aspects of the relationship between the medical school and the university.

With the growing interrelation between the realms of physical and medical sciences and with the development of the field of biophysics as applied to medicine, there is more and more contact between teachers trained in physics and the medical student, so that integration of these fields in the formation of the future doctor should be no great problem. Moreover, in Switzerland and in some other European countries, the first year of the curriculum is devoted to physics, chemistry and biology. Since the courses are given in the faculty of science of the university, they are—or could be—infused with the university spirit. It is consequently the contact of the medical student with the humanities and the arts which constitutes the basic problem of the medical school-university relationship. This by no means implies support of the widespread contention that a knowledge of the humanities is all the cultured man requires, or is even identical with culture. It is curious to note that the physician frequently has a feeling of inferiority because of his inadequacy in the humanities—a feeling that does him credit—whereas it is a very rare thing for a man of letters or lawyer to deplore his ignorance of the main streams of physical and biological thought. The educational values of the natural sciences are in no way inferior to those of the humanities; indeed, the aim of the cultured man is to be acquainted with the fundamental progress in all the various fields of human knowledge.

Undeniably, an excellent means by which the university can help the medical student to satisfy his cultural urge would be to encourage frequent contacts with the students of other faculties. Unfortunately the medical student is isolated; he spends the greater part of his day in the medical center, which is often remote from the university buildings where the humanities are taught. The requirements of the medical course make any change in this situation unlikely. Promise of greatly aiding intellectual exchange, however, is given by creation of a "university city" with its organized special students' "family" groups living either in individual housing units or sections of floors in a larger building. Each "family" should be planned to bring together students of different faculties and of different nationalities and religions as well. The "*Cité universitaire*" in Geneva, planned for construction in the near future, will be organized along these lines.

The organization of lectures on general cultural topics with a view to attracting students of all the various faculties must be regarded with a certain scepticism. Generally, the students are fairly saturated with courses in their own subjects and they are not attracted by further lectures even if given by eminent people. In our university the organization of such general cultural series has proved a failure as far as student interfaculty attendance is concerned. Usually it is not the students

who come but the educated public and professors of the university. However, a similar series of courses organized by the *"Association Générale des Etudiants"* has had better results and serves as another reminder of the necessity to stimulate the organization of cultural events by the students themselves.

Studying foreign languages and literatures is another means of broadening the cultural equipment of the future doctor, but far more valuable still is a semester or two of study in a foreign country. The ideal would be to make it obligatory to spend at least one semester in a foreign university in a foreign-speaking country, such a semester to be taken only after the student has shown sufficient mastery of the language of the country to which he is going. With organization of some international system of exchanges the financing problems of such a plan should not prove excessively difficult.

Finally, it is obvious that a continual effort must be maintained by the faculty of the medical school itself to raise its own general cultural level. For example, would not our aims be better approached if a more careful selection was made of the teaching staff? Should not the opportunity be seized wherever possible to ensure that selection of teachers is based on the candidate not only best qualified professionally but also possessing the highest degree of general culture? Strictly factual and technical teaching, however impeccable, can be sterile from the viewpoint of general culture. The really cultured teacher by his approach to teaching, by a delicate discreet touch here and an allusion there will integrate the facts he is inculcating into their cultural context and give them their proper place and importance in the general scheme of human knowledge. This is the personality who leaves his indelible mark on a generation of students. *Your sincerely, J. M. Posternak, M.D., professor of physiology, University of Geneva, Switzerland.*

Dear Editor:

Your January 1956 *JOURNAL OF MEDICAL EDUCATION* editorial on "Student Loan Funds" was of particular interest to us here at the State University of New York in Syracuse because our own experience is directly opposite to that reported in your comments.

Not only are our own local $59,000 fund resources inadequate for our needs, but a number of our students have unsuccessfully tried to obtain loans from service clubs here in New York State. Within the past three months, for instance, one of our students was refused a loan by the Rotary Club of a large upstate New York city and another was turned down by a Lions Club in the Catskills.

As to those medical schools whose "student loan funds are currently being little called upon," I would suspect that these are either those with substantial scholarship funds or those with students from higher income families. On the other hand, schools such as ours, with a philosophy favoring loans over scholarships, and with a widely representative student body, find that the demand for loans far exceeds the supply.

It is also worth noting that the financial situation for college students and for medical students is not necessarily analogous. In our experience,

at least, many of our students have hesitated to go into much debt at the college level but, once accepted to medical school, are perfectly willing and desirous of seeking loan aid.

It would seem unfortunate indeed, therefore, if the general impression were to be left either that (1) there was no need for additional loan funds for medical students or (2) that medical students didn't have enough faith in themselves to assume loan obligations. Such an impression might well sabotage the efforts of some medical schools to augment their own funds as well as casting an unsavory reputation on the fine medical students attending our institutions.

If you feel it appropriate to call the above points to the attention of your readers, we would be happy to have this letter so used. *Sincerely yours, Davis G. Johnson, Ph.D., Assistant Dean for Student Personnel, State University of New York, Syracuse.*

NEWS DIGEST

1956 *AAMC Institute*

Once again, an AAMC Institute Committee is planning a program of critical self-evaluative activity for medical education.

Plans for the fourth in the series of AAMC Institutes are well under way. The 1956 Institute, made possible by support from the Commonwealth Fund and the National Heart Institute of the Public Health Service will be held at the Broadmoor Hotel, Colorado Springs, Colo., November 8-10, immediately preceding the Annual Meeting of the Association on November 12-14.

During the past three years, participants at the Institutes have considered the problems of teaching the basic medical sciences. It is believed that the Institutes will gain in effectiveness at this point by shifting for a time to emphasis on the problems of the student. This year, consideration will be given to the problems of appraising applicants to medical school. Undergraduate school relationships, the development and evaluation of procedures, assessment of intellectual capacity and achievement, consideration of nonintellectual characteristics of students—all will be studied and discussed by this year's participants.

Attendance at the Institute is by invitation only. Each member and affiliated medical school in the United States, Canada, Puerto Rico and the Philippines is invited to send one participant. Many of these participants will be faculty members and administrators who are currently engaged in admissions work at the medical schools. Many others have special contributions to make to the subjects that will be discussed.

Dr. JOHN T. COWLES, University of Pittsburgh, is chairman of the 1956 Institute. The following are members of the Planning Committee:

JOHN L. CAUGHEY JR., associate dean, Western Reserve University School of Medicine; JOSEPH J. CEITHAML, dean of students, University of Chicago School of Medicine; ROBERT J. GLASER, associate dean, Washington University School of Medicine; WOODROW W. MORRIS, assistant dean, State University of Iowa College of Medicine; GEORGE PACKER BERRY, dean, Harvard Medical School, chairman, AAMC Committee on Educational Research and Services; THOMAS H. HUNTER, dean, University of Virginia School of Medicine, chairman, AAMC Subcommittee on Evaluation and Measurement; and HELEN H. GEE, Director of Research of the AAMC.

The four topic areas for discussion, and the subcommittees responsible for each, are:

Evaluating the Intellectual Characteristics of the Applicant:
ROBERT J. GLASER, chairman; JOHN A. D. COOPER, associate professor of biochemistry, Northwestern University Medical School; PAUL S. BURNHAM, associate professor of psychology, Yale University; LOUIS F. FIESER, professor of chemistry, Harvard University; NORMAND L. HOERR, chairman, department of anatomy, Western Reserve University School of Medicine.

Evaluating the Nonintellectual Characteristics of the Applicant by Interview and Other Informal Techniques:
JOSEPH J. CEITHAML, chairman; JOSEPH K. HILL, assistant to the dean, State University of New York, College of Medicine; PETER V. LEE, assistant dean, University of Southern California School of Medicine; JOSEPH ZUBIN, Principal Research Scientist (Biometrics), New York State Department of Mental Hygiene.

Evaluating the Nonintellectual characteristics of the Applicant by Standardized Measures:
WOODROW W. MORRIS, chairman; ROBERT C. BERSON, dean, Medical College of Alabama; DANIEL H. FUNKENSTEIN, clinical associate in psychiatry, Harvard Medical School; WILLIAM SCHOFIELD, associate professor of psychology, University of Minnesota Medical School; LYMAN M. STOWE, associate professor of obstetrics and gynecology, Stanford University School of Medicine; CHARLES R. STROTHER, professor of clinical psychology, University of Washington School of Medicine.

Evaluating the Admissions Process:
JOHN L. CAUGHEY JR., chairman; WILLIAM E. CADBURY JR., dean, Haverford College; CARLYLE F. JACOBSEN, executive dean for medical education, State University of New York; AURA E. SEVERINGHAUS, associate dean, Columbia University College of Physicians and Surgeons; ROBERT L. THORNDIKE, professor of education, Columbia University Teachers College; VERNON E. WILSON, assistant dean, University of Kansas School of Medicine.

MEND News

The problem of management of mass casualties was the subject of a postgraduate course sponsored by the MEND program of the University of Washington School of Medicine in April. Physicians of Washington and Canada, faculty members and students heard papers by the nation's specialists describing the physician's and hospital's role in sorting of casualties, handling of radioactive fallout, radiation, blood and blood substitutes, infections and use of antibiotics.

Lederle Awards

Announcement of the 1957-58 program of Lederle Medical Faculty Awards has been made by Lederle Laboratories. Purpose of the awards is to aid promising teachers and investigators in the preclinical sciences and to assist departments to offer opportunities for development of promising individuals. The program provides financial aid for periods not in excess of three years and is administered by an independent committee composed of professors from medical schools throughout the United States. One candidate from each school in the United States and Canada is considered in any given year. Nominations for the 1957-58 award must be submitted by October 31, 1956.

Japanese Medical Conference

A team of American medical scientists are meeting in a six-week symposia held from April 14 through May 26 in Japanese medical schools and societies in Tokyo, Kyoto and Fukuoka. The meetings are jointly sponsored by pharmacological, physiological and surgical societies of Japan and the Universities of Tokyo, Keio, Kyoto, Kyushu and Hokkaido, and deal with the physiologic and pharmacologic bases for anesthesiology.

The American doctors are also giving lectures to classes in medical schools. Sponsored by the Unitarian Service Committee, Inc., the members of the American team are: Dr. M. H. Seevers, professor and chairman of the pharmacology department, University of Michigan Medical School; Dr. W. Clarke Wescoe, dean and professor of pharmacology and experimental medicine, University of Kansas Medical Center; Dr. Joseph F. Artusio, associate professor of surgery (anesthesiology), and Dr. Walter F. Riker, associate professor of pharmacology, Cornell University Medical College; and Dr. Carlton C. Hunt, professor of physiology, Albert Einstein College of Medicine.

Heart Association Awards $830,000

Awards of $830,000 to 131 scientists engaged in cardiovascular research, for studies to be conducted during the 12 months beginning July 1, 1956, have been announced by the American Heart Association.

Dr. Irvine H. Page, Heart Association president, has stated that these awards raise to more than $14,000,000 the sums allocated by the Heart Association and its affiliates for scientific research in the field of the heart and blood vessel diseases since the organization became a national voluntary health agency in 1948.

Fellowship for Women Physicians

The Women's Medical Association of New York has announced the program of the 1957 Mary Putnam Jacobi Fellowship for graduate woman physicians, American or foreign. Applications for this fellowship must be filed with the secretary of the committee by October 1, 1956 and will start the following October 1957.

The fellowship is given for medical research, clinical investigation or postgraduate study in a special field of medicine and amounts to $2,000.

Health Council Booklet

"Product—Meetings Plus" is the title of the National Health Council's 1955 annual report which has been

presented in booklet form. Purpose of the book is to indicate what the year's meetings *produced* as well as list meetings and financial assets.

Tobacco Industry Enlarges Fellowships

The fellowship program of the Tobacco Industry Research Committee, originated in 1955 to interest medical school students in basic research, will be continued and enlarged in 1956. Allocation has been increased from $25,000 to $35,000, which will enable more medical students to receive fellowships. Each fellowship is for $500. This is one phase of the Committee's $1,500,000 research program.

Passano Foundation Award

The board of directors of the Passano Foundation has announced that Dr. George N. Papanicolaou, professor emeritus of clinical anatomy at Cornell University Medical College, has been selected as the recipient of the $5,000 Passano Foundation Award for 1956.

The Passano Foundation's purpose is the encouragement of medical science and research, particularly that having a clinical application. It is sustained by contributions from the Williams & Wilkins Company, publishers of medical and science books.

The award to Dr. Papanicolaou is being made for his fundamental researches in exfoliative cytology, now widely applied in the early detection of cancer.

Cancer Grants

Bi-monthly cancer research grants in April amounted to $171,600, the Damon Runyon Memorial Fund has announced.

The allocations will help support research projects in hospitals and medical schools in nine states, Canada and the Institute Jules Bordet in Brussels, Belgium. The Belgian research work is one of many projects being supported by the Runyon Fund in 16 foreign countries.

Ford Foundation Grants $10 Million

A $10,000,000 program of grants to the National Fund for Medical Education has been announced by the Ford Foundation.

The appropriation is intended to assist the fund in its efforts to strengthen the financial support for medical schools throughout the United States and to develop new sources of such support. Payment will be made on a matching scale in the next five to 10 years with particular encouragement given in the early years during attempts to increase the contributions of present donors.

College Briefs

Chicago

The importance of spiritual as well as medical factors in the treatment of patients is being recognized by a new joint professorship of religion and health.

The new professorship, believed to be the first of its kind, is being filled by the Rev. GRANGER WESTBERG, presently chaplain of the University clinics and associate professor of pastoral care in the Federated Theological Faculty of the school.

Purpose of the appointment is to study the proper relationship between the physician and the minister as each seeks to help people, and to aid the medical student in understanding what the clergyman can do for patients.

Cincinnati

A fellowship in "psychosomatic dermatology" has been announced by

Dr. STANLEY E. DORST, dean. Its purpose is to develop further the university's program of teaching future dermatologists the psychologic problems involved in treating skin diseases. The fellow will be a physician with advanced training in dermatology and with an understanding of psychodermatologic relationships. He will participate in both teaching and research activities.

Duke

The total Josiah C. Trent Collection in the History of Medicine has been given to the medical library. It contains some of the world's most prized books and manuscripts in medical science and has been described by authorities as "one of the most distinguished collections of its kind ever brought together in this country by an individual collector." The library was dedicated on April 20 during the annual meeting of the American Association of the History of Medicine.

Among the classics in the collection are the first edition of William Harvey's "De Motu Cordis" dealing with the discovery of circulation of the blood and considered to be the cornerstone among medical history books; first editions of the works of Andreas Vesalius, founder of modern anatomy; earliest Arabic translations of the Greek physicians Hippocrates and Galen; the first edition of Dr. Oliver Wendell Holmes' paper on "The Contagiousness of Puerperal Fever."

Georgetown

The National Cancer Institute Public Health Service, has given a grant of $106,145 to support research to be conducted at the District of Columbia General Hospital. This is part of a cooperative study aimed at the evaluation of new drugs that have a suppressive effect in advanced cancer.

Harvard

Dr. HUGH R. LEAVELL, professor of public health practice and assistant dean, has been granted a year's leave of absence to serve as advisor to the Government of India on problems of community sanitation and child and maternal health.

Dr. Leavell will serve under a grant given by the Ford Foundation to the Indian government. From headquarters in New Delhi, he will help organize a program for training Indian health workers and on the evaluation of ways in which the cooperation of Indian villagers can best be attained in community health projects.

At the same time, Dr. Leavell will be searching for means to further implement the teaching of foreign students in the Harvard School of Public Health through increased understanding of their problems.

Iowa

The Iowa division of the American Cancer Society has made possible the purchase of a Telecobalt rotational therapy unit to be installed in the new medical research building. The power of the emitted radium rays will be equivalent to those generated by a 3,000,000 volt X-ray machine. Operation of the unit will be under the direction of the department of radiology headed by Dr. E. F. VAN EPPS. Technical advice and assistance will be supplied by personnel of the Radiation Research Laboratory under the direction of Dr. T. C. EVANS.

In addition to the funds for the purchase of this cobalt unit, the American Cancer Society and its Iowa division recently have awarded grants totaling $75,000 to various departments.

Jefferson

For the first time in the history of the Schering Award two senior students from the same school have been awarded first prizes in the 10th an-

nual competition. CHARLES KING MERVINE III, was senior author of a paper on "The Prevention and Treatment of Blood Transfusion Reactions" and DAVID CHARLES SCHECHTER of a paper on "Current Concepts in the Management of Osteoporosis." They co-authored the two papers.

Kansas

The National Fund for Medical Education has given a $39,981 unrestricted grant. Present plans call for using it to aid teachers' salaries and help finance postgraduate medical courses. This grant brings a total of $130,561 received from the fund during its five-year history.

Louisville

Plans for a city medical center which would provide a new medical and dental school building and three more hospitals have been presented for action to civic leaders and medical staff members. Dr. JOSEPH C. HINSEY, director of the New York Hospital-Cornell Medical Center, spoke to this group on April 6th urging rapid action for the sake of greater aid to both school and community. He declared that the best patient care, the best training of doctors, dentists, technicians, nurses and therapists, is accomplished through a medical center and in this way money and personnel can be saved because of use of joint services and staff members.

Northwestern

A grant of $300,000 has been received from the Commonwealth Fund to help finance a basic change in the pattern of medical education. This new program is designed to help students make the transition from basic laboratory science courses to clinical training. It will help equalize the load and integrate the courses over the four years of medical education. The number of lectures will be reduced in favor of increased personal contact with patients and more and earlier clinical work. Additions to the faculty as well as more thoroughly integrated courses, are being planned.

Orientation to the patient will be stressed by allowing junior students as well as seniors to do clinical work with patients. The length of the school year will be extended to four quarters with classes staggered so only 75 per cent of the junior and senior students will be in school at any time. Curriculum changes have been under study for the past two years.

Oklahoma

The Regents have officially designated the Oklahoma City campus as "The University of Oklahoma Medical Center." In addition to being dean, Dr. MARK R. EVERETT is now director of the Medical Center.

A $400,000 modernization program is now under way at the center with one of the projects included in the program being a central oxygen system to serve the University and Crippled Children's Hospitals. A $75,000 "institutional" grant for heart research has been received from the National Heart Institute. The 3-year grant is the first of its kind presented to a medical center. One of the major objectives of this type of grant is that heart research projects will cut across departmental lines and enable specialists in different fields at the center to integrate and correlate their work.

Pennsylvania

A new speech and hearing center in the university hospital has been opened under the operation of the department of physical medicine and rehabilitation. Medical supervision of patients is being done by the department of otolaryngology. The center has been made possible by a grant from the Office of Vocational Rehabilitation of the Department of Health, Welfare and Education.

Patient care, teaching and research in speech and aural rehabilitation has been expanded, as a result, both

in the school of medicine and the department of psychology. Dr. FRANK P. BAKES, associate professor of psychology, has been named chief investigator and speech pathologist. Dr. MARTIN C. SCHULTZ has been named to the medical staff as audiologist and co-director of the center.

Saint Louis

A $41,958 Neurology Training Grant has been awarded by the National Institute of Neurological Diseases and Blindiness of the Public Health Service. Dr. LOUIS L. TUREEN, assistant professor of clinical neurology and psychiatry and executive secretary of the section on neurology, has been named graduate director of the Medical Training Program.

The two-year grant will be used primarily for the training of graduate students in neurology and to increase the facilities for training and patient care. It will also provide for additional personnel and establish a program of research.

SUNY

A graduate educational program in the biological sciences basic to medicine will open in September. It will admit candidates for the Ph.D. degree, initially offering programs in anatomy, biochemistry, pharmacology and physiology. Purpose of the program is to prepare men to assume leadership in teaching and research. Courses will be taught by faculty members who are specialists in basic science fields. Students cannot be enrolled in the medical and graduate programs at the same time.

Dr. CHANDLER MCC. BROOKS, professor of physiology, is chairman of the executive committee of the new graduate faculty.

Dr. ROBERT F. FURCHGOTT has been appointed executive officer of the department of pharmacology. Formerly associate professor of pharmacology at the Washington University School of Medicine in St. Louis, Dr. Furchgott will assume his new post sometime this spring. The department of pharmacology was previously combined with physiology as a joint department and is just now assuming full and separate departmental status.

Temple

Research grants totalling $40,844 have been awarded to staff members primarily to support studies being carried on in cancer, liver and dermatology.

Rapidly nearing completion in the $10,500,000 expansion program are a 10-story, 400 bed hospital, an outpatient unit, a building housing x-ray facilities and a suite of 12 operating rooms. Contributions to the building from medical alumni at present total $600,000.

Western Reserve

Dr. ROBERT H. EBERT, presently professor of medicine at the University of Chicago, will become the Hanna-Payne Professor of Medicine and director of the department on July first.

Wisconsin

The Oscar Mayer Foundation has provided a grant of $27,000 for compensation of a research associate in the department of medicine. The recipient of the grant will be known as the Oscar Mayer Research Associate and is to be selected upon the recommendation of the chairman of the department of medicine.

The Nepco Foundation of Port Edwards, Wisc. has provided a grant of $2,500 a year for a period of 10 years to be used to support or compensate research fellows or trainees in either medicine or surgery or to aid in the support of research in the field of clinical medicine or surgery. The funds are to be expended on recommendation of a committee composed of the dean of the school and the chairmen of the departments of medicine and surgery.

Audiovisual News

Use of AV Equipment Made Easy at Marquette

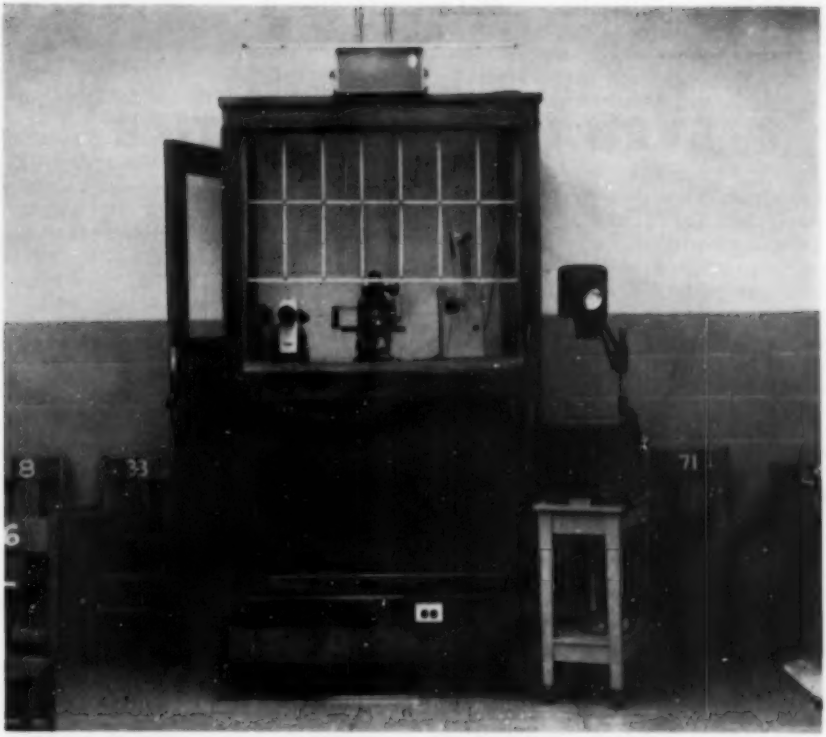
Student projectionists gladly shoulder the responsibility of having equipment where it is wanted when it is wanted at Marquette University School of Medicine. The students like the job. They can do it better and more economically than anyone else.

One student is appointed each Fall from the freshman class. The student is usually selected from a number of volunteers qualified and experienced in the operation of the standard types of projection equipment. He becomes responsible for good projection services in his class for four years. Traditionally, and for no other reason, he is paid $450 for the first year and nothing thereafter. Loss of pay during the latter years does not seem to affect the quality of his work in any way.

The trained projectionists corps is organized by the department of art and photography under direction of Leo C. Massopust Sr. The acceptance of wider AV responsibilities by this department has resulted in many conveniences and economies of which the projectionist service is one. Another is equipment service.

A wide range of teaching equipment is always readily available but economically used and conserved through this central department. Lec-

Living anatomy, anatomical structures are superimposed on a photograph in an illustration prepared by Leo C. Massopust Sr., Department of Art and Photography, Marquette University School of Medicine.



Permanent equipment in clinical lecture room at Marquette includes, from left to right, 2 x 2 slide projector, 3¼ x 4 slide projector, 16 mm. projector and 10 x 10 Vu-Graph. The Vu-Graph ordinarily stays near the lecturer's station. Note that the sound speaker is mounted at the back of the room to avoid stringing the speaker cable to the front of the room. The full window in the front of the booth may be slid closed if booth is to be locked.

ture rooms and departments that make great use of certain equipment have a piece of that equipment permanently allocated to them. This equipment is pulled out only for checking and repair or for emergency use elsewhere. For example, a 16 mm. projector is allocated to the microbiology department, one to the pharmacology department and one to the clinical lecture hall. These three projectors along with one in the central pool for general use and temporary replacement have been found sufficient and satisfying to all users.

The quantities of standard equipment and the extent of decentralization are shown below:

Every lecture room and laboratory is equipped with a permanently mounted screen. Two screens are mounted in the clinical lecture room

	Total	In Central Pool	In High-Use Areas
Projectors: 16 mm.	4	1	3
3¼ x 4 slide	8	4	4
Vu-Graphs	2	1	1
2 x 2 slide	5	2	3
Screens	11	3	8
Total	30	11	19

for dual projection. One of these screens is motor controlled for easier use by lecturers not completely familiar with the equipment.

All equipment is thoroughly checked and repairs made once a year. Arrangements are made with a local commercial house for repairs as well as for temporary projector replacements in case of emergency needs while projectors are being repaired.

The cost of the projection and equipment services is covered in the budget of the department of art and photography. The convenience and reliability of the services to faculty members are positive assets to the teaching and research program out of proportion to the costs.

TV in Industry

Closed-Circuit and Industrial Television is a recent publication which should prove of value to colleges considering the possible uses of TV and to individuals concerned with the technical aspects of closed circuit television. The first chapter indicates the present range of uses of TV in industry and emphasizes future potential. While industrial applications cannot apply directly to medical education they are suggestive. For example, an RCA plant uses a follow-the-leader plan to speed the production of special intricate components. While a specialist constructs a unit other workers follow him by means of TV receivers and copy his technique directly.

The bulk of the book stresses the technical phases such as TV systems, types of cameras, installation and service. The final chapter presents construction details for the technician to construct a small inexpensive television camera.

Edward M. Noll: **Closed-Circuit and Industrial Television,** The Macmillan Co., New York, 230 pp., $4.95.

TV in Dental Schools

Twenty-five per cent of the dental schools are now using television in their programs. Six of the schools (14 per cent) have TV installed in the dental school whereas five of the schools use the television facilities established at the university. This information was revealed in a quantitative survey conducted by mail in May 1955 by the American Dental Association Film Library.

The five schools with permanent installations use TV for classroom teaching, lecture-demonstrations, homecomings and society meetings. The first school using television was Loyola University, Chicago College of Dental Surgery. Since 1954 every floor and every classroom has been wired for TV reception and more than a dozen courses are taught by closed circuit television. The greatest present use of TV is at the University of Texas School of Dentistry, where it is used extensively to give individual instruction to small groups of students.

A brief mimeographed report giving more information is available from the American Dental Association Film Library, Chicago; Attention: Miss Helaine S. Levin, Film Librarian.

Films Do Not Teach . . . . . Or What's a Teacher For

The teacher is a human engineer with high priority problems to solve. The validity of his solutions for these teaching problems depends on his assessment of both the students and the subject matter to be presented. These two factors will determine his means of teaching or communicating.

If students and subject matter have been fully studied in terms of teaching methodology before a class begins, teaching success is well assured. The teacher selects and arranges specific experiences for a specific student group. He has a wide range of experiences to select from. Some "experiences" are pretailored such as films or slides; others can be widely varied such as lectures or demonstrations. Selection is the crucial factor in teaching, separating the teacher as an arranger of experiences from the straight lecturer,

illustrator or film showman.

If the teacher knows why he selects a film experience and helps to bridge the experiential gap between the students and the film his chances for success are good. The outcome certainly should be expected to be significant enough to test or evaluate, another function of good teaching the film cannot perform by itself.

Golden Reel Films Selected

Juries of medical teachers and practitioners selected the following films shown in the "Medical Sciences" Category of the 1956 Golden Reel Film Festival held in Chicago last month.

BRACHIAL PLEXUS BLOCK—Astra Pharmaceutical Products, Inc.

NON-SYPHILITIC VENEREAL DISEASES—E. R. Squibb & Sons

A PORCELAIN JACKET CROWN TECHNIQUE—American Dental Association

SURGICAL CORRECTION OF INTERVENTRICULAR DEFECTS EMPLOYING CONTROLLED CROSS-CIRCULATION—University of Minnesota

ANOMALIES OF THE AORTIC ARCH—E. R. Squibb & Sons

PRINCIPLES OF RESPIRATORY MECHANICS—PART II—Science Pictures, Inc.

THE HELA CELL STRAIN—Medical Audio-Visual Institute

STILL GOING PLACES! ACTIVE MANAGEMENT OF DISABILITY IN THE AGED—Charles Pfizer & Co., Inc.

FRACTURES ABOUT THE KNEE—Churchill-Wexler Film Productions

THE BRONCHOPULMONARY SEGMENTS; PART I: ANATOMY AND BRONCHOSCOPY—Charles Pfizer & Co., Inc.

MYASTHENIA GRAVIS—DIAGNOSIS, TREATMENT, AND MANAGEMENT—Sturgis-Grant Productions, Inc.

Closed-Circuit Television in Medical Institutions

Closed-circuit television is removing distance and walls as barriers to visual observation. Hospitals, medical schools, clinics, mental institutions, are using this new communications tool to give better close-ups of teaching demonstrations; for observing patients; for providing quick reference to remote records; to help guard entrances and corridors. By effecting considerable savings in staff time, a closed-circuit television system offers a means of enlarging an institution's capacities without enlarging its budget.

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Book Reviews

Cancer of the Lung

Milton Rosenblatt, M.D. and **James Lisa,** M.D. The **Oxford University Press,** New York, 1956, 350 pp. with index.

This volume of over 300 pages deals with Cancer of the Lung and provides the reader with a great deal of information concerning the vagaries of the disease.

The first two chapters deal with incidence, historical aspects, distribution, prevalence and its increasing importance in modern medicine. The discussion of the importance of tobacco, particularly cigarette smoking and occupational hazards as etiologic agents, is interesting.

The importance of careful study and the individualization of each patient suffering from a typical respiratory disease is timely. Each diagnostic procedure, such as careful physical examination, roentgen studies, bronchoscopy and bronchography, has its usefulness and pitfalls enumerated. Careful cystologic study of secretions is also stressed.

The chapter dealing with the types of carcinoma and their spread is clear and concise.

The clinical manifestations deal with not only the localized signs but also with those related to the rest of the body.

Bronchoscopy as well as pre- and postoperative care are given in some detail.

Operative technique is well presented. Adenocarcinoma is discussed and accompanied by excellent illustrations.

The different types of palliatives are of interest. The importance of team work between the internist, surgeon and psychiatrist might have been more forcefully presented.

The volume is to be commended.

The extensive bibliography affords a very reliable source of reference. The medical student and practicing physician should read it. The thoracic surgeon will find it most interesting.

Joseph W. Gale, *Wisconsin*

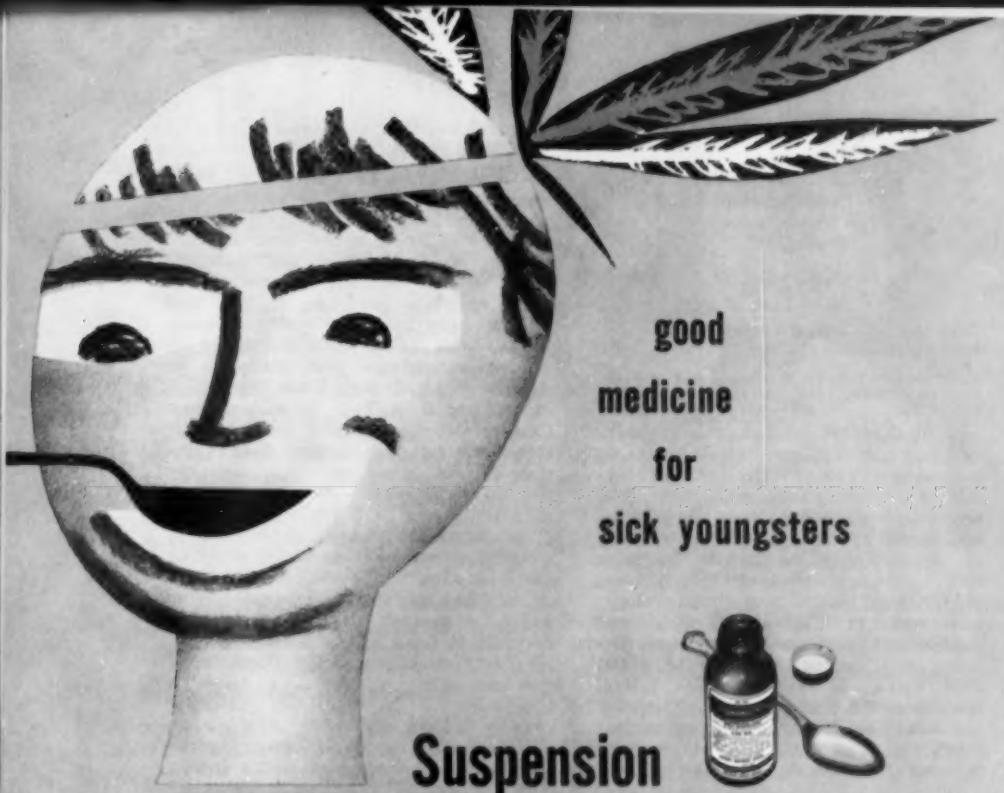
Practitioners' Conferences

Held at New York Hospital, Cornell Medical Center. **Claude E. Forkner,** M.D., editor. **Appleton-Century-Crofts, Inc.,** New York, 1956, 293 pp.

This book is a continuation of a series of publications of the conferences for physicians, surgeons, specialists and the general practitioner. The purpose is to bring to this group the knowledge of a great medical center in the form of bedside teaching. The scope of the conferences is wide, bringing the opinions of many specialists on the numerous panels and their diagnostic and therapeutic skills.

There are eleven subjects included in this volume. These are Cancer of the Skin and Precancerous Lesions of the Skin and Oral Cavity, The Detection of Early Cancer, Hodgkin's Disease and Lymphosarcoma, Ulcerative Colitis, Eczeme Including Seborrheic Dermatitis and Contact Dermatitis, The Minor Venereal Diseases, Tumors of the Brain, Convulsive Seizures, Neurovascular Syndromes of the Shoulder Girdle, The Common Cold and its Complications, and Hay Fever. The subject of each conference comprises a chapter of the volume. The editor has written a summary at the end of each chapter. This serves adequately to crystallize the opinions of the participants. References are included and many chapters contain illustrations.

All of the chapters appear to the reviewer to present an excellent and comprehensive survey of their respective subjects. Those two which seem outstanding are those which concern convulsive seizures and the common cold. This volume is highly recommended by



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the reviewer for its clarity of expression, informality of presentation, and for the valuable data which it contains for the general practitioner.

John C. Krantz, Jr., *Maryland*

Textbook of Clinical Pathology, Fifth Edition

S. E. Miller, Editor. **Williams and Wilkins Co.**, Baltimore, 1955. 1208 pp. with index, $11.00.

With the fifth edition, this standard text has been expanded and brought up to date, giving relatively complete coverage of a rapidly advancing field. The topics covered include hematology; clinical chemistry; liver function; the assay of chemotherapeutic agents, vitamins and hormones; medical immunology, bacteriology, mycology and parasitology; tests used in diagnosis of viral and rickettsial diseases and of venereal diseases; and methods of study of spinal fluid, urine and renal function, saliva, sputum and bronchial aspirates, gastric and duodenal contents, feces and seminal fluid. Ten well qualified authors contributed the various chapters; all are well qualified in their fields.

As with most such books, the emphasis and degree of completeness in coverage of topics varies with different authors but, altogether, the book appears to this reviewer to provide the most complete coverage of the field of laboratory medicine of the currently available texts of this subject. A few inconsistencies and instances of repetition are present (e.g. technique of test for L. E. cells appears twice). Certain deficiencies are present. The technique for urobilinogen determination is not given. No discussion of the significance of determinations of antistreptolysin "O" titer, serum iron or serum copper is given, although these would seem to have as much place as the discussion of the streptococcus MG or serum triglyceride measurements which are covered. More attention might be given to the limitations and range of error of various procedures. Some chapters such as the one on assay of vitamins appear primarily useful as reference sources to one interested in obtaining determinations rarely performed in clinical medicine; others, such as the one on

blood groups provide an excellent introduction to the subject for the student. In spite of these and other minor drawbacks, this book should provide the beginning student with a satisfactory text, and the physician with a good general reference work for the significance of methods employed in laboratory medicine.

J. G. Palmer, *North Carolina*

Books and Pamphlets Received

(As space permits, those with the greatest interest to our readers will be reviewed)

Urology

B. G. Clarke, M.D. and **Louis Del Guercio,** M.D. **Blakiston Division, McGraw-Hill Book Co.,** New York, 1956, 243 pp. with index.

Modern Nutrition in Health and Disease

Edited by **Wohl** and **Goodhart. Lea & Febiger,** Philadelphia, 1955, 1062 pp. with index.

The Annual Survey of Psychoanalysis

Edited by **John Frosch,** M.D. **International Universities Press, Inc.,** New York, 1956, 682 pp. with index.

The Neuroses in Clinical Practice

Harry P. Laughlin, M.D. **W. B. Saunders Co.,** Philadelphia, 1956, 802 pp. with index.

Diseases of the Nervous System

Russell Brain, M.D. **Oxford University Press,** New York, 1956, 996 pp. with index.

The Management of Pain in Cancer

Edited by **M. J. Schiffrin,** Ph.D. **The Year Book Publishers,** Chicago, 1956, 245 pp. with index.

Diagnosis of Congenital Heart Disease

Sven R. Kjellberg, Edgar Mannheimer, Ulf Rudhe and **Bengt Jonsson.** The Year Book Publishers, Inc., Chicago, 1955. 649 pp. with index.

Human Physiology, 4th edition

F. R. Winton, M.D and **L. E. Bayliss,** Ph. D. Little, Brown and Company, Boston, 1955. 616 pp. with index.

Prevention of Disease in Everyday Practice

Isadore Givner, M.D. and **Maurice Bruger,** M.D. C. V. Mosby Company, St. Louis, 1955. 964 pp. with index. $20.

Roentgen Interpretation

George W. Holmes, M.D. and **Laurence L. Robbins,** M.D. Lea & Febiger, Philadelphia, 1955. 525 pp. with index.

A Handbook of Hospital Psychiatry

Louis Linn, M.D. International Universities Press, Inc., New York, 1955. 560 pp. with index. $10.

The Personnel Exchange

Faculty Vacancies

• ASSOCIATE OR ASSISTANT PATHOLOGIST: To Dr. David R. Manze. Board certified or eligible. Major general hospital, medical school affiliated; active teaching and research institution. Highly qualified staff. Address Albert Einstein Medical Center, Southern Division, Philadelphia 47, Pa.

• PHARMACOLOGIST: Full-time position with rank of instructor available July 1, 1956. Doctorate degree required, previous experience in pharmacology teaching and research desirable. To assist in teaching of medical and nursing students only; remaining time free for personal research. Personal laboratory facilities and equipment available. Salary on department budget, minimum $5000. Reply: Dr. Frank C. Ferguson, Jr., dept. of pharmacology, Albany Medical College, Albany 8, New York.

• ASSISTANT PROFESSOR OF BACTERIOLOGY: Initial salary $5000. Superannuation benefits provided. Duties commence July 1, 1956. Application with details of qualification and experience and names of two referees should be submitted by March 31, 1956 to Dean of Medicine, University of Saskatchewan, Saskatoon, Canada.

• PEDIATRIC NEUROLOGIST: The Bowman Gray School of Medicine has a staff appointment for a year or six months in the department of neurology and the department of pediatrics. Applicant should be certified and interested in specializing in neurological disorders of childhood. Address: Richard L. Masland, M.D., Professor of Neurology, Bowman Gray School of Medicine, Winston-Salem, North Carolina.

• ASSOCIATE OR ASSISTANT PATHOLOGIST: To Dr. David R. Meranze, Board certified or eligible. Major, general hospital, medical school affiliated; active teaching and research institution. Highly qualified staff. Address: Albert Einstein Medical Center, Southern Division, Philadelphia 47, Pa.

• TEACHING FELLOW IN OPHTHALMOLOGY: Position available immediately. Applicant must have completed at least two years of approved residency training and be licensed, or eligible for licensure in Indiana. Salary $6000. Apply to Fred M. Wilson, M.D., professor of ophthalmology, Indiana University Medical Center, Indianapolis 7, Indiana.

• BACTERIOLOGIST: Assistant professor, Dalhousie University Medical School. Teaching of medical and science students. Opportunities for clinical and academic research; new laboratories being planned. Apply stating salary expected to the professor of Bacteriology, Pathological Institute, 62 University Avenue, Halifax, Nova Scotia.

• MEDICAL WRITER: "Gray flannel suit" type, 25-35 years old with imagination, science background and talent for concise, effective prose. Job entails contacting physicians; planning scientific convention displays; writing, directing medical movies. Salary dependent on experience and demonstrable ability. Liberal benefit program. Eastern manufacturer. Send complete resume. Address: V-45.

• M.D. or PH.D: Well-experienced in diagnostic microbiology and in teaching medical students who desire to work in the microbiology department of a medical school and in the laboratory of a large hospital. Vacancy to be filled before the beginning of the next academic year. The starting salary depends on background and experience, but for a qualified person would range about $7000 per year. Teaching obligations are moderate, time for research work with satisfactory opportunities and equipment. Address: V-46.

• PSYCHIATRIST: Opening for full-time employment in VA hospital. Acute intensive treatment service affiliated with Baylor University College of Medicine and Texas Medical Center. Teaching of residents as well as care of patients is required. University appointment commensurate with qualifications. Superior opportunities to do laboratory as well as clinical research. If certified, depending on qualifications, pay may be as high as $13,760. Also, excellent opportunities for experience years after residency to prepare for certification. Write Manager, VA Hospital, Houston, Texas.

• PSYCHIATRIST: Full time for school of medicine, active teaching and treatment program. Salary open. Address: V-47.

• ASSISTANT PROFESSOR OF PHARMACOLOGY: Ph.D. or M.D., latter preferred. Teaching, administration and research. Salary $4,500-$6,000 depending upon qualifications and experience. Address: Dr. M. F. Murnaghan, Department of Pharmacology, University of Ottawa, Ottawa, Ontario.

• PREVENTIVE MEDICINE: Administrative-teaching position teaching public health to medical students; coordinating preventive medical services and medical supervision of an outpatient service. Address: Dean F. G. Gillick, Creighton University School of Medicine, Omaha 2, Nebraska.

To aid in solution of the problem of faculty vacancies, MEDICAL EDUCATION will list persons and positions available, as a free service. The school department or person may have the option of being identified in these columns or of being assigned a key number for each position listed. Mail addressed to key numbers will be forwarded to the person or department listing the request.

Information for these columns should reach the Personnel Exchange, Journal of Medical Education, 185 N. Wabash Ave., Chicago 1, Ill., not later than the 10th of the month which precedes the month in which the listings will appear.

Personnel Available

• PEDIATRICIAN: male 46, married. Amer. Board of Pediatrics, masters degree in pathology. Wishes teaching position in medical school or combined teaching, student health position. College teaching experience, 7 years. Address: A-195.

• PARASITOLOGIST—PUBLIC HEALTH: M.Sc., Ph.D., 41, married. Background in medical and zoological parasitology, including medical entomology, in government public health departments, hospitals and university premedical and medical school teaching. Societies, publications. Presently a senior parasitologist in a public health department and research associate in a large eastern university medical school. Desires full-time teaching position in a university with opportunity for basic and clinical research, preferably in association with local hospital laboratories. Address: A-198.

• INTERNIST, TEACHER, INVESTIGATOR: Former professor of medicine, qualified internist, member of societies, author, investigator in infectious diseases, much foreign experience, interested in obtaining academic position in clinical medicine with teaching and opportunity for research. Address: A-200.

• ASSOCIATE PROFESSOR OF RADIOLOGY at general hospital and university medical school desires position preferably in East. Credentials furnished on request. Address: A-201.

• INTERNIST: Well-trained; qualified use of radioisotopes. Available September 1956. Desires clinical faculty position on salaried basis, either full-time or part-time with private practice privilege. Military service completed. Age 30; married, with family. Address A-210.

• MEDICAL JOURNALIST: Woman; would like work editing manuscripts and assisting with the writing of medical publications; have B.J. degree, University of Missouri School of Journalism, 1950; 5 years newspaper experience; 16 hours medical science; employed; available on 2 weeks notice. Address: A-180.

• ANATOMIST: Man; D.D.S., 30. Veteran. Experienced in teaching gross anatomy, histology, embryology, neuro anatomy, some pharmacology, in approved medical school. Have completed 3 years of medicine in approved medical school. Desire teaching position with opportunity to complete work for M.D. in return for tuition and stipend. Prefer U.S. or Canadian school but would consider foreign locality. Available immediately. Address: A-213.

• BIOCHEMIST: Ph.D., 34, married. Experience in microbial growth factors, isolation of bacterial toxins and animal nutrition. Presently research associate in medical school studying relationship of nutrition to antibody formation. Desire teaching and research in medical school or membership in hospital research team. Address: A-214.

• PHYSIOLOGIST-PHARMACOLOGIST: Ph.D. 1953, 37, male, family. Majored in physiology while worked toward Ph.D. degree, taught physiology and pharmacology the last two years as assistant professor. Desire teaching and research or teaching position either in physiology or pharmacology. Available July 1956. Publications. References. Address: A-215.

• PHARMACOLOGIST: 33, veteran, Ph.D., with one year post-graduate research stressing localization of site of action of drugs on the central nervous system with well known pharmaceutical company. Desires research preferably in neuropharmacology with or without teaching. Publications. Address A-216.

• ANATOMIST: Ph.D. Woman. Seeks academic position. Address: A-217.

• ZOOLOGIST-CYTOLOGIST: Ph.D. June 1956. Male, married, no children. Interested in problems of growth and differentiation on the cellular level as studied by cytochemical and classical cytological methods. Experience in cytochemical methods for chromosomes, nucleic acids and basic nucleo-proteins. Desires either an academic post with facilities for research or a straight research position. Address: A-218.

• PATHOLOGIST: 33, board certified in pathologic anatomy and clinical pathology. M.D. Illinois, 1945. Experience in diagnostic pathology, experimental pathology, and teaching. Faculty appointment. Publications. Desires position combining hospital pathology with opportunity for teaching and research. Address: G. A. Nedzel, 45 E. Bellevue Place, Chicago 11, Illinois.

• INTERNIST: Hematology, radiobiology subspecialties. Passed Internal Medicine Board written examination. Four years radiation-hematology research. Director radioisotope laboratory. Desires academic-type research position with opportunity for clinical hematology teaching and practice. Available summer 1956. Address: A-219.

• BIOCHEMIST: Ph.D. 25. At present holds a postdoctoral research fellowship sponsored by the National Institute of health. Research concerned with alcohol metabolism. Fellowship expires June, 1956. Desires teaching position with research opportunities. Address: A-220.

• MICROBIOLOGIST: Ph.D., 32, married. Doctorate from large Eastern university Experience in planning and directing research program in medical microbiology; teaching experience. Presently Research Associate. Desires staff position at medical or dental school with opportunity for research. Address: A-221.

• PARASITOLOGIST: Ph.D., male, unmarried. Has Ph.D. in parasitology from University of California, Berkeley, California. Two and a half years of experience in teaching and research in parasitology. Currently engaged in a study of the epidemiology of certain parasites of animals and man; engaged in summer in studies of fauna in Arctic areas. Desires teaching position. Have prepared lecture notes in medical and veterinary entomology, helminthology and protozoology and medical bacteriology. Address: A-222.

• INTERNIST: 34, Australian, M.D., M.Sc., seeks university clinical research teaching post with view to permanent residence in U.S.A. Excellent training in basic sciences (pathology, bacteriology) and internal medicine in Australia, England, France, U.S.A. Publications, society membership, teaching experience. Main interest cardio-pulmonary disease. Would accept fellowship initially in cardio-pulmonary group. Address: A-223.

• DERMATOLOGIST: Diplomat of American Boards, candidate for Ph.D., with extra training in microbiology and histopathology, interested in clinical, research and teaching opportunities. Age 33; draft exempt. Department head preferred. Address: A-224.

• PARASITOLOGIST: M.S., Ph.D., certificate in tropical and military medicine. Retired army officer, 54, with 15 years experience in university teaching of undergraduates and graduates and 13 years varied experience in field, laboratory and teaching in army. Desires full or part time position in medical school. Special interest parasitology and tropical medicine. Scientific publications, books. References. Available in fall. Address: A-225.

• PARASITOLOGIST: Ph.D., June 1956. Experienced in teaching, laboratory and field research, desires teaching and/or research position in Parasitology, related fields or basic medical science. Available May, 1956. Eastern location preferred but others considered. Address: A-226.

• ANATOMIST: Ph.D., 32, family, desires teaching-research position in medical school. Research interests in endocrinology, radiobiology. Address: A-227.

• PHYSIOLOGIST, PARASITOLOGIST: Ph.D. University of Michigan. Twenty years experience teaching and research. Willing to teach nurses, medical technologists, etc. Desires full time academic appointment. Address: A-228.

• INTERNIST: 35, present medical school faculty member. Rounded clinical and teaching experience. Extensive original investigation, publications in metabolism and related fields. Radioisotope techniques. Board certified. Desires full-time teaching position with opportunity for investigative contribution. Address: A-229.

• ANESTHESIOLOGIST: Foreign graduate; female; trained in institution with medical school connection. Seeks position with teaching institution or similar. Address: A-230.

• PHARMACOLOGIST: Ph.D., 29, atomic research, publications, some teaching. Entering junior year of medical school. Desires part-time academic post to complete medical program. Address A-231.

• PHYSIOLOGIST-ZOOLOGIST: Ph.D., 34. Training and interest in endocrinology and cell physiology. Presently engaged as research associate in biochemistry. Desires academic and/or research position. Address: A-232.

• INTERNIST-CLINICAL CHEMIST: M.D., 40, male, family. Now head physiology, hospital medical research foundation; medical school appointments assistant professor clinical pathology. Presently engaged animal and clinical research and teaching (medicine, clinical pathology, pharmacology experience). Fulitime hospitals and/or medical schools 10 years, including 5 years head 400 bed hospital clinical chemistry section. Diplomat American Board Pathology; American Board Clinical Chemistry. Major interests: water and electrolytes, diabetes, carbohydrate metabolism and endocrinology. Address: A-233.

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